DOCUMENT RESUME

ED 223 043 EC 150 344

AUTHOR Ash, Linda D.; Gambach, James
TITLE A Review of the Published Research Literature on Arts and the Handicapped, 1971-1981.
INSTITUTION Illinois State Univ., Normal.; National Committee, Arts for the Handicapped, Washington, D.C.
PUB DATE 82
NOTE 38p.
PUB TYPE Reference Materials - Bibliographies (131)

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS Annotated Bibliographies; *Art; Dance; *Disabilities; Drama; Emotional Disturbances; Hearing Impairments; Learning Disabilities; Mental Retardation; Music; Physical Disabilities; Speech Handicaps; Visual Arts; Visual Impairments

ABSTRACT

The document presents findings of a search of research literature in the area of arts and the handicapped published between 1971 and 1981. The literature search addresses the various art forms of visual art, drama, music, and dance/movement as well as the major handicapping conditions: mental retardation, hearing impairments, speech handicaps, visual impairments, emotional or behavioral disturbances, physical disabilities, and learning disabilities. The first section contains abstracts of 53 articles. Abstracts range in length from one to three pages and usually include the following information: purpose of the study and hypotheses, type of subjects, selection and assignment to experimental and control groups, methodology and research design, instrumentation and intervention strategies (experimental treatments), results (including relevant statistical findings), and conclusions. Among the specific topics covered by the research cited are an art based remediation program for learning disabled children, effects of music on performance of manual tasks by retarded females, music therapy in the treatment of autistic children, motor creativity of preschool deaf children, and the effects of sociodramatic activities on social interaction among behaviorally disordered preschoolers. The document concludes with a section listing 30 dissertations on arts and the handicapped. (SW)

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A REVIEW OF THE PUBLISHED RESEARCH LITERATURE ON ARTS AND THE HANDICAPPED 1971-1981

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The National Committee ☆ Arts for the Handicapped

An educational affiliate of the John F. Kennedy Center for the Performing Arts

A REVIEW OF THE PUBLISHED RESEARCH LITERATURE

ON

ARTS AND THE HANDICAPPED

1971-1981

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The National Committee, Arts for the Handicapped welcomes your participation in keeping this Literature Review of Research current. Please send abstracts or information related to such documentation to NCAH at 1825 Connecticut Avenue, N.W., Suite 417, Washington, D.C. 20009. Thank you.

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INTRODUCTION

The National Committee, Arts for the Handicapped has long recognized the importance of research. It was in this spirit that the Committee requested Dr. Frances Anderson to review the published research literature on arts and the handicapped to provide a helpful overview of the work that is going on. This state of the art compendium reflects key activities of those working in this area of educational research.

Some of the reasons for attention to applied research in arts and the handicapped are practical. Today, when widespread and rapid changes are being made in government support, demands for strict budget and programming accountability become imperative. Knowing more about what does and does not work can increase the efficiency and relevance of our work.

Above all, research can be of great use to practitioners and other members, too. Not even the most well-rounded investigators always know what others have done. As Dr. Anderson explains in her introduction, many of the studies are scattered or not published. It therefore seems worthwhile to bring together this preliminary survey of some of the currently available applied research.

The National Committee, Arts for the Handicapped hopes that this publication will stimulate increased national growth and development in the fields of arts research for all handicapped people.

Dr. Ernest L. Boyer
Chair
NCAH Board of Directors

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INTRODUCTION

Purpose

The purpose of this project was to conduct a review of the published research literature in the area of arts and the handicapped. Initially the search was to be limited to empirical studies published in professional journals since the publication of the article, "The State of the Research," by William G. Kalenius, Jr. which appeared in The Arts and Handicapped People Defining the National Direction (Proceedings of a Conference, April 28-29, 1977, Bureau of Education for the Handicapped, Division of Innovation and Development and the National Committee, Arts for the Handicapped, 1978). However, as the project began and the first automated searches were completed, it became apparent that there were very few published studies in the 1978-1981 period that met the project criteria. Therefore, the project staff decided to extend the literature search to include materials published within the last decade, i.e., 1971-1981. The staff felt that a 10 year search would be more fruitful and would result in a much more comprehensive document.

Methodology

This literature search utilized the same criteria that Kalenius (1978) employed in his article. His search was limited to studies that were "structured inquiry that utilized acceptable scientific problem solving methodology and created new knowledge that could be generally applicable" (Kalenius, 1978). Using these criteria, the current literature search focused on empirical research (Eisner, 1978) that employed appropriate educational and psychological research methodology that resulted in "hard data." The search did not include articles dealing with case studies or ones that focused on philosophical or other "subjective" statements. This focus was taken because of the realization that lay persons and the community of scholars outside of the arts are more willing to accept research that is systematically undertaken using the criteria stated above and which results in "hard data."

This literature search included the following art forms: visual art, drama, music, and dance/movement as well as the major handicapped conditions: mental retardation, hearing, speech, and visual impairments, emotional or behavioral disturbances, and physical and learning disabilities. The computer search covered the following data bases: Psychological Abstracts Information Service (Psychinfo), and Educational Resources Information Center (ERIC). Psychinfo was initiated in 1967 and has 334,021 citations with monthly updates. The source for Psychinfo is the American Pyschological Association in Washington, D.C. Psychinfo scans 940 periodicals and 1500 books, technical reports, and monographs yearly to provide coverage of the world's literature in psychology and related disciplines.

ERIC was initiated in 1966 and there are two main files in the ERIC system; Research In Education (RIE) and Current Index of Journals in Education (CIJE). RIE covers 52,729 educational documents such as papers presented at professional conferences, final grant reports and timely educational research projects. CIJE is an index of about 780 journals and publications in education and related fields.

All possible key words and descriptors for the arts and the handicapped were selected from the ERIC and Psychinfo thesauruses in conducting the computerized searches. In all, over ninety different descriptors related to the arts, handicapped and research were utilized in the automated searchers. Hand searchers were made of the following indexes: The Education Index which covers 334 periodicals; The Music Therapy Index and the Art Index which covers 202 periodicals.

In addition to utilizing indexes and computer assisted searches, journal articles themselves provided additional sources. For example, the bibliography of 138 articles identified in the Kalenius article (1978) was preused to located research studies published within the 1971-1981 time frame. As a final step in locating published research, experts in the field of arts for the handicapped were contacted in an attempt to identify as many studies as possible and to insure that no important article was overlooked.

In spite of these efforts, the project staff was not able to identify or locate many specific empirical studies published in professional journals that met the project criteria in the arts areas of drama and dance/movement. Additionally not all areas of handicapping conditions are represented. It is possible that some study or studies have been overlooked, but it is more probable that these gaps indicate a pressing need for more research. The current literature search identified 31 studies involving music, 18 studies involving the visual arts, three studies in dance/movement, and one in drama.

One of the issues that makes this literature search difficult is the variability in the description of handicapping conditions. During the past decade there have been several changes in the ways that disabilities are identified and described. For example, since 1973, there has been a shift in descriptions of mental retardation. Before 1973 there were two major classifications -- educable mentally retarded and trainable mentally retarded -- and after this date the area was divided into four categories -- mildly retarded, moderately retarded, severely retarded and profoundly retarded (American Association of Mental Deficiency, 1973). Moreover there are differences from state to state in the ways handicapping conditions are described and determined. (For example, in Illinois, the term developmentally disabled is currently in use.) Thus, the project staff had to rely solely on the authors' descriptions of the handicapping conditions in their research. The reader should be aware that this variability makes conclusions difficult to draw and also poses problems for researchers who may wish to replicate studies.

Organization

This literature search is divided into two major parts. The first part includes abstracts of the 53 articles that have been identified as meeting the criteria for inclusion. The second part is a listing of pertinent dissertations and where they can be located.

The journal abstracts range in length from one to three pages. Abstractors used a modified American Psychological Association (APA) format. Whenever possible, the abstracts included the following information: purpose of study and hypotheses, type of subjects, selection and assignment to experimental and control groups, methodology and research design, instrumentation and intervention strategies (experimental treatments), results (including relevant statistical findings), and conclusions. All the instruments, tests and scales used in these studies were cited in each abstract including the specific form and publication date whenever this information was included in the article. When specific dates of test instruments were not indicated in the original article, this fact has been indicated by: (n.d.).

Abstracts are never as informative as the original article; however, such synopses can provide sufficient information so that the reader can decide whether the original source should be consulted. Author-written abstracts are undoubtedly the best for they insure all pertinent details are included. The next best solution would be to have authors "approve" the abstracts of their article. In this literature search, such approval, was not feasible and the project staff hopes that they have not made any major omissions in the abstracting process.

The second part of this documentation includes a listing of dissertations written on the topic; arts and the handicapped from 1971-1981. In compiling this list a computer search using the Dialog Information Retrieval Service was made of the Comprehensive Dissertation Data Base (CDI). The CDI is a definitive subject, title and author guide to virtually every American dissertation accepted at an accredited institution since 1861. However not all dissertations included in the CDI data base are accompanied by an abstract and it is difficult to determine the content of a study that is identified only by title and author. This problem occurs because not all institutions of higher learning opt to have their students' dissertations included in Dissertation Abstracts nor made available through University Microfilms in Ann Arbor, Michigan. A "hands-on perusal" of dissertations is beyond the scope of this study, the list of dissertations included in this literature review may not be complete. Additionally, since the project staff had to work from dissertation titles only, no potential dissertation title was omitted because it did not "seem" to fit the established project criteria (i.e., it did not appear to be empirical research). Thus all identified titles that fell between the years 1971-1981 relating to arts and the handicapped have been included. The resulting list includes 30 dissertations: 10 studies in music; nine studies in the visual arts; five studies in dance/movement; five studies in drama; and one study in the general area of creative thinking. Illinois State University, Normal, Illinois, and Texas Woman's University, Denton, Texas are making a major effort to purchase all relevant dissertations in the area of arts and the handicapped.

Finally, this document is only a beginning. It is anticipated that once it is published and disseminated, readers will provide other pertinent research studies which can be incorporated into a subsequent publication. It is the project staff's hope that this document provides a careful accounting of what has been researched in arts for the handicapped during the last decade and pinpoints obvious knowledge gaps. Like the chemist in his or her laboratory trying to identify an "unknown", one of the first steps is to discover what the "unknown" chemical is NOT. In other words, what we do not know is just as important as what we do know.

Thus, this literature search is a first step -- and one that is desperately needed at a time when accountability and justification for the arts cannot rely solely on subjective rhetoric and articulate philosophical stances (Anderson, 1981). Within these abstracts, the reader will find some hard evidence that the arts are important vehicles for facilitating the education and improving the quality of life of handicapped persons.

Acknowledgements

This project owes its successful completion to the work of two dedicated professionals; Linda Ash and James Gambach. Thanks also goes to Dr. Fred V. Mills, Chairperson, Department of Art, Illinois State University and to Linda Barnett, Hope McClure and Kathleen Davis for their support and assistance in the typing and reproduction of this document.

Gratitude is also expressed to Dr. Shaun McNiff, Dean of the Arts Institute and the Institute of the Expressive Therapies, Lesley College, Cambridge, MA, for his professional support in providing office space and library privileges to the Project Director. Without this assistance, some crucial references would not have been located in time to be included in the project.

Project Staff

Project Director: Frances E. Anderson, Ed.D., ATR, Professor of Art, Illinois State University. Dr. Anderson has over two dozen articles published in professional journals. Her book, Art for All the Children: A Creative Sourcebook for the Impaired Child: Charles C. Thomas, Springfield, 1978 is being used as a text in over a dozen universities. Her clinical experience has included work with deaf, developmentally disabled, blind, orthopedically handicapped, aphasic, autistic and multiply handicapped children. In 1981, she was the guest editor of a special issue of Studies in Art Education (Vo. 22 No. 2) which was devoted to the topic: Research and Issues in Art for Exceptional Persons. Most recently she has co-authored a curriculum package: Arts for the Handicapped (jointly with Jose D. Colchado of San Jose State University) which is slated for publication by Abbeyville Press.

Principal Co-Investigator: Linda D. Ash, B.S., M.L.S. Director: Special Education Instructional Materials Library, Illinois State University.

Principal Co-Investigator: James Gambach, B.A. Graduate Students in Special Education at Illinois State University.

Bibliography

American Association of Mental Deficiency. Manual on termology and classification in mental retardation: revised 1973. Baltimore, MD., Garamond Pridemark Press, 1973.

Anderson, F. E. Research and issues in art for exceptional populations. Studies in Art Education, 1981, 22(2), 5-6.

Current index to journals in education (Vol. 13, No. 1 - Vol. 13 No. 6) Phoenix, AZ., Oryx Press, 1980-1981.

Eagle, C. T. (Ed.). The music therapy index (Vol. 1). Lawrence, Kansas: National Association for Music Therapy, Inc. 1976.

Eisner, E. W. Educating artistic vision. New York: MacMillan Publishing Co., 1972

ERIC document reproduction service (EDRS). Arlington, VA. Computer Microfilm International Corporation, 1975-1978.

Granick, L. (Ed.). Psychological abstracts (Vol. 64, 65). Arlington, VA.: American Psychological Association, 1980-1981.

Hewitt, M. L. (Ed.). Education index (Vol. 22-Vol. 52). New York: H. W. Wilson Co., 1971-1981.

Kalenius, W. G. The state of the research. In arts and the handicapped: defining the national direction. (Proceedings from a Conference, April 28-29, 1977). Bureau of Education for the Handicapped, Division of Innovation and Development and the National Committee, Arts for the Handicapped: Washington, D.C., 1978.

Patten, D. S. (Ed.). The art index (Vol. 50-51. New York: The H. Whitxen Co., 1971-1981.

Art Form: Visual Art (Drawing)
Disability: Deaf

Davis, Carole F. & Hoopes, Janet H. Comparison of house-tree-person drawings of young deaf and hearing children. Journal of Personality Assessment, 1975, 39(1), 28-33.

The authors hypothesized that, in a comparison of the House-Tree-Person Test (HTP) drawings of young deaf and hearing children, there would be differences in the drawing of the ear and mouth by the deaf, and in the portrayal of the branching structure of a tree. In this study, 80 pre-lingually deafened school children were matched with 80 hearing school children on a one-to-one basis with respect to age, sex, race, and as closely as possible on socio-economic status and level of intellectual functioning. There were 20 boys and 20 girls (10 deaf children and 10 hearing children of each sex) in each age category (7 yrs., 8 yr., 9 yr., 10 yr.), except the 10 year level that included 22 boys and 18 girls.

All children were tested in groups, generally in their regular classrooms. Appropriate instructions (draw a house, draw a tree, draw a man) were printed at the top of each sheet of drawing paper and given orally and manually. The instructions to draw a "whole" man were communicated orally and by sign and gesture; the term "man" was used instead of "person" for the benefit of the younger deaf children. To identify children who were best and least adjusted in terms of their classroom behavior, teachers rated their children individually using the Behavior Rating of Pupils Scale (Lambert and Bower, 1961). Normal distributions were found for both deaf and hearing samples; since the means of the distributions varied significantly, children were compared in terms of adjustment, only on the basis of their placement within their own samples.

Items for scoring the drawings of House and Tree were taken primarily from Rappaport (1966) and the items for the drawings of the Man from Koppitz (1968). Three judges scored all drawings for the presence or absence of items that met the following criteria: (a) they were not primarily related to age and maturation; (b) they occured on 15% or fewer of the drawings at a given age level; (c) they differentiated between the drawings of children with and without emotional problems. A child's final score was determined by the agreement of at least two of the raters; an item was retained only if the rate of agreement in scoring was 96% or more between any two of the judges.

Results showed that there were almost no differences in the numbers of deaf or hearing children including any of the emotional indicators in their Man drawings. The only item where there was a significant difference was in excessive shading of the mouth, which occurred more frequently in the drawings of hearing children ($p < .05$), but could be explained by their attempts to create more skillful drawings. On the scoring of the drawings of the Tree, a distinction was made between those drawings where the branches were actually drawn out and those where it was only implied by shape. Here a significant difference occurred between the drawings of the hearing and those of the deaf ($p < .001$); the branches were drawn out by 42 hearing and 9 deaf; and implied by 38 hearing and 71 deaf. The hypothesis that items related to emotional disturbance would be able to distinguish between youngsters showing good

and poor classroom readjustment was not substantiated for either the deaf or hearing. It seems that the H-T-P is only helpful in distinguishing extreme deviations from normality in children; disturbed children show a tendency toward barrenness in their drawings whereas normal children, both hearing and deaf, show a tendency toward inclusion of details. Further study should determine whether there is a significant difference between mouth and ear drawings of adolescent deaf and hearing youngsters since this age group is more conscious of physical differences.

Art Form: Visual Art
Disability: Hearing Impaired

Greene, J. Craig., & Hasselbring, T.S. The acquisition of language concepts by hearing impaired children through selected aspects of an experimental core art curriculum. Studies in Art Education, 1981, 22, (2), 32-37.

This study investigated whether an art activities and language curriculum would increase the development of basic language concepts in hearing impaired children. The authors hypothesized that the acquisition of basic concepts would be larger in children who experienced an art program utilizing visual, tactile, and linguistic modalities than in children taught these concepts without an art program.

The sample included 21 children of normal intelligence, ranging from 5 yr. 6 mos. to 7 yr. 9 mos, taken from the population of two classrooms from two southern state schools for the deaf. All children used "total communication". Some of the children exhibited various other handicaps including cerebral palsy and emotional or behavioral disorders.

This study was designed so that there were four groups, two groups from each class. All groups experienced both control and experimental phases. Form A of the Boehm Test of Basic Concepts (BTBC) (n.d.) was given to all four groups to discover what concepts the children had not mastered. The teachers of each group then worked with the children on these concepts. One experimental group from each classroom was taught the concepts through the experimental art curriculum while the control group from each classroom was taught in the traditional manner. The experimental art curriculum consisted of using open-ended questions in sequence to motivate the children as they were drawing and to help them to discover the intended concepts through art. Each art activity utilized information from other curriculum units and provided a conceptual basis for the following art session. The concept development program's first phase involved nine art activities over five weeks and time was controlled for all groups. At the end of five weeks the BTBC, form B, was administered to all four groups.

In the second phase, the two groups who had received the art activities program were given a five week traditional program while the two groups who had previously been given a traditional program were given the five week, mini-session art program. At the end of phase two all groups were readministered the BTBC, form A.

Correlated t-tests, significant at the .05 level, showed a difference in the means of experimental and control conditions for each group. The authors also examined the raw score data and determined that the art activities program was the key in concept attainment for each group. Every child improved proportionatly more under experimental conditions than control conditions. The authors suggest that since art activities have been successful in improving language concepts, then empirical research should be directed towards examining art activities as part of the curriculum for the hearing impaired.

Art Form: Visual Art (Drawing)
Disability: Mentally Retarded

Arem, Cynthia A., & Zimmerman, Barry J. Vicarious effects on the creative behavior of retarded and nonretarded children. Journal of Mental Deficiency, 1976, 81 (3) 289-296.

The purposes of this study were trifold: (a) to determine creative performance on nonverbal tasks in modeling behavior, (b) to determine the relationship between a child's level of general intelligence and his/her learning to be creative, and (c) to relate the effects of a training program on measures reflecting different amounts of transfer and creativity. The authors hypothesized that modeling would be more effective than verbal instruction in teaching retarded children to respond creatively. Normal subjects were 34 male and 34 female nonretarded fifth and sixth graders randomly assigned to each experimental group. Socioeconomic background was middle to lower-middle class families. Racial composition was 49 Anglo-American, 14 Mexican-American, and 5 Black. Chronological age ranged 10.0 to 12.6 yr., with a mean of 11.3. All had scores that ranged between 89 and 111 on the Lorge-Thorndike Intelligence Test. The retarded subjects were 30 male and 24 female educable mentally retarded students randomly assigned to each experimental group. The economic background was the same as the normal group and the racial composition of the group was similar (39 Anglo-American, 12 Mexican-American, and 3 Black). Chronological age ranged from 10.1 to 12.6, with a mean of 11.4. Using the Wechsler Intelligence Scale of Children or the Stanford-Binet Intelligence Scale, their IQs ranged from 48 to 79; however the exact IQ for each child was not available because of the administrative policy of the school. The experimenter was a female Anglo-American adult, and a 10-yr. old Anglo-American girl served as the model.

The authors developed a task, called the squares task, similar to the circles task from the Torrance Test of Creative Thinking, Figural Form B. The task was composed of 15 squares presented in three rows of five each, and the children were asked to make as many different objects or pictures as possible using the squares. The authors normed the squares task on 100 elementary-school children, and analyzed these data for elaboration, originality, fluency, and flexibility. Elaboration was defined as the amount of detail present in a drawing, originality as the statistical infrequency of each item, fluency as the number of different ideas presented, and, flexibility as the number of categories needed to group similar ideas together. A model's routine was prepared that was high in elaboration but otherwise normal in the remaining creative dimensions.

All training sessions were presented on videotape with each episode lasting 11 minutes. There were four treatment groups: modeling only, verbal description only, both and neither. The children were taken in small groups of 4 to 6 to a test room in the school where they saw the videotapes on a 22-inch high resolution monitor. Immediately after observing the tape and drawing their pictures, the subjects were given the "circles", "picture completion", and "picture construction" subtests from the Torrance Test. The test protocols were independently scored according to Torrance's criteria; interscore agreement was found to be high on the various measures for each task.

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The evaluation of the impact of the model's performance on all measures of the children's creative responses was carried out using multivariate analysis of variance procedures. A significant multivariate modeling effect was obtained ($p < .001$). Univariate F tests indicated that modeling groups displayed more elaboration on all three transfer tasks (all $ps < .001$). Verbal description of the creative responses also enhanced performance ($p < .009$). A child's IQ also influenced responding ($p < .001$). The nonretarded children scored higher than the retarded children in elaboration on all three transfer tests (all $ps < .001$). A significant interaction among modeling, verbal descriptions, and IQ was found ($p < .05$).

The same design was used to analyze the children's fluency and flexibility responses on the transfer tasks. The analysis indicated no main effects for modeling, descriptions, or sex. However, a significant IQ effect was found ($p < .001$). A significant interaction was found between IQ and modeling ($p < .03$). Nonretarded children who were exposed to modeling displayed less fluency ($p < .01$) and less flexibility ($p < .01$) on the "circles" task than those not exposed. However, with retarded children, the pattern was opposite as youngsters in the modeling group displayed significantly more fluency and flexibility ($ps < .01$) than did the control group. A significant interraction between IQ and verbal descriptions was noted ($p < .04$).

In order to analyze the amount of mimicry, a scorer was asked to compare the responses of the children on the circle task with the elaboration of the model on the squares task and to record instances where the children copied the model's drawing. Out of 811 total scored responses, there were only 39 instances (5%) of mimicry.

The study showed that the creativity of retarded children can be enhanced through observation of a model's performance. Retarded children displayed similar levels of transfer despite the changes in task structure that had to be considered. Data from this study indicated that a child's general level of intelligence affected his/her acquisition of nonverbal creative responses from a model's performance.

Art Form: Visual Art
Disability: Mentally Retarded

Bryant, Antusa., & Schwan, Leroy B. Art and the mentally retarded child. Studies in Art Education, 1971, 12(3), 50-63.

After briefly discussing five tests of art aptitude that are widely known (The Graves Design Judgment Test, 1948; The Meier Art Judgment Test, 1940-1942; The Knauber Art Ability Test, 1932-1935; The Horn Art Aptitude Inventory, 1953; and the McAdory Art Test, 1929-1933). The authors note that these tests were not developed for assessing the art abilities and aptitudes of the mentally retarded child. The current study was undertaken; 1) to design an art test to determine what a student knows about the art elements; and 2) to assess effects of a structured art curricula specifically developed for disabled and nondisabled children.

The first part of the study was devoted to designing an assessment tool in art. According to the authors, this test, the Bryant-Schwan Design Test (BSDT) assesses a learner's knowledge about art and understanding of the five basic art elements (texture, line, value, shape and color). The BSDT consists of 120 test items presented in simple question form requiring the learner to match answers or to identify answers that are provided either in written form or visual symbols. There was no information provided about the reliability or validity of the BSDT and no test norms were reported.

Next, the authors spent nine months working with 115 mentally retarded, emotionally disturbed and nonimpaired learners (ages 6 to 18 years, IQ 23-80) from five schools. During this pilot study period, the authors developed and field tested two lessons in art that incorporated at least one principle or element of design. Based on this exploratory art instruction, the authors developed 15, 1/2 hour art activity lessons.

After the pilot phase, the experimental study began. The purpose of this final phase was to determine the extent to which mentally retarded learners can gain knowledge of the basic art elements and can incorporate this knowledge into their own art work. The authors also wanted to determine the relationship between the learner's knowledge of art and his/her intelligence as determined by scores on the Peabody Picture Vocabulary Test (PPVT) (n.d.).

The subjects for this study were the entire self-contained special education class (n=13) at the Wilson Campus School which was affiliated with Mankato State College. The subjects had a chronological age (CA) range of 8 years, 6 months to 12 years, 9 months; a mental age (MA) range of 6 years, 1 month to 12 years, 11 months. Their intelligence quotients (IQ) (type of intelligence test not specified) ranged from 59 to 108. The authors did not report how many males or females were in the class.

First the subjects were given form A of the PPVT and then the BSDT. Then the treatment period consisting of 15, 1/2 hour art lessons commenced. The lessons were given twice weekly over a 7 and 1/2 week period. A series of three art lessons were taught on each of the five design elements. The primary goal of the treatment was to develop the art vocabulary of the

learners. After each of the series of three lessons, the corresponding part of the BSDT was again administered (i.e., three lessons on line were presented to the class, and then the BSDT student on line was administered to the class, etc.). At the end of the treatment period the BSDT was given the third time as a posttest. Art work produced during the study was considered to be of secondary importance and there was no formal analysis or evaluation made. Informal observations reported by the authors indicated that the learners all produced imaginative designs and the art lessons appeared to be enjoyable for the learners.

Pre, interim and posttest mean scores on the BSDT were compared using t tests. Statistically significant ($p < .05$) t tests were reported on four of the subtests (line, color, value and texture). There was no significant correlation between learner's scores on the PPVT and scores on the BSDT.

The authors concluded that mentally retarded children are able to acquire art knowledge and termonology through a structured teaching approach. Such an approach combines direct experience with art media and more traditional teaching methodology such as drill work and numerous repetitions of specific art terms and art concepts. The authors point out the need for more research and indicate they are attempting to standardize the BSDT. The BSDT is produced at the end of the article with only the omission of some of the visual figures and color response cards.

Art Form: Drawing
Disability: Mentally Retarded

Calhoun, George, Jr., & Whitley, Jim D. An investigation of the Goodenough-Harris Drawing Test and the (Coopersmith) Self-Esteem Inventory. Educational and Psychological Measurement, 1978, 38(4), 1229-1232.

Although the Goodenough-Harris Drawing Test (DT) (Harris, 1963) is used primarily to assess intelligence, it is believed that the DT and other self-drawing tests are actually measures of the individual's self-perception or body images. This study purposed to determine whether a significant relationship existed between scores on a test of self-esteem and those on a self-drawing test. The original subjects included 16 primary and 16 secondary Anglo and Mexican-American educable mentally retarded (EMR) pupils, ages 6 to 12. However, because of absenteeism, the number was reduced to 8 for the primary group and 8 for the secondary group. Both groups were pretested in March 1976 and again in March 1977. The DT was used to assess intelligence of both groups, and to determine its relationship to self-perception as assessed by the Self-Esteem Inventory (SEI) (Coopersmith, 1967). The reliability coefficients for the DT have been reported to be above .90, and the SEI has shown test-retest reliability coefficients of approximately .70.

The DI and SEI were both individually administered in 1976 and 1977. The Pearson product-moment correlations were computed to assess the relationship between the DT and SEI scores of primary and secondary EMR students. Only the secondary EMR students had significant correlations between DT and SEI for both 1976 (.67 correlation) and 1977 (.63 correlation). However, since the sample size was very small, extreme care should be taken in interpreting the results.

Art Form: Visual Art
Disability: Mentally Retarded

Carter, Kyle R.; Richmond, Bert O.; & Bundschuk, Ernest A. The effect of kinesthetic and visual-motor experiences in the creative development of mentally retarded students. Education and Training of the Mentally Retarded, 1973, 8(1), 24-28.

General findings from some research in creative thinking during the 1960s indicate the child of lower intellectual ability may achieve as well or better than his/her peers on measures of figural creativity. Thus, this study was undertaken to evaluate the effects of a creativity training program using both visual-motor and kinesthetic-motor exercises on the creative development of mentally retarded children.

The subjects were 16 male and 10 female mentally retarded children randomly selected from the Athens Unit of the Georgia Retardation Center. Ages ranged from 7 to 16 years; intelligence ranged from 40 to 85 (psychological measure to determine IQ not indicated). The students were randomly assigned to a kinesthetic-motor group, a visual-motor group, or a control group.

The visual-motor (VM) treatment involved creative activities such as drawing, fingerpainting, modeling clay, stringing beads, etc. They met in group sessions for ten 40-minute sessions over a four week period. Following the treatment, the Torrance Tests of Creative Thinking, Figural Form A (TTCT) (Torrance, 1966) were administered to the VM students. The kinesthetic-motor (KM) treatment included group activities of tumbling, dancing, and organized games; and, individual activities based on the work of Wyrick (1968). As in the VM treatment, there were ten 40-minute sessions over a 4 week period, but the KM students spent an average of three minutes on individual tasks arranged in the following 10-day sequence: Day 1, Rope; Day 2, Hula-hoop; Day 3, Parallel lines; Day 4, Box; Day 5, Maze; Day 6, Tin Cans; Day 7, Ball-Wall; Day 8, Frisbee; Day 9, Ball-Hoop; and Day 10, Paper Plates. Each of these tasks involved body movement to perform the activity in a creative manner. As in the other experimental group, all KM subjects received the TTCT following the four week sessions. The control group students received no planned activities and were allowed free play during the time of experimental treatments.

An analysis of variance was used to determine if significant differences resulted on any of the four factors of the TTCT (fluency, flexibility, originality, and elaboration). Results showed the only significant differences among the three groups occured on the factors of flexibility ($p < .05$). Results of a series of t-tests to compare the performance of the experimental groups with each other and with that of a control group were reported by the authors. These data revealed that the difference in flexibility was attributable to the performance of the VM group. Both treatment groups received higher scores, although not significantly so, on all the creativity factors than did the control group.

Findings indicate that the flexibility of mentally retarded students is more related to VM rather than KM experiences, and that teachers may use similar creative activities to enhance the mentally retarded child's education. In future studies, a larger sample of students may indicate more clearly the impact of creative training on mentally retarded children.

Art Form: Visual Art
Disability: Mentally retarded, multiply handicapped

Musick, Patricia L. Interdisciplinary study of creativity and behavior: special child development. Houston, Texas: University of Houston at Clear Lake City, 1977 (ERIC Document Reproduction Service No. ED 146 750).

This study investigated the significance of creative functioning in the lives of mentally retarded and multiply handicapped children. The author's purpose was to assess whether the visual-spatial and creative expression of retarded children could be increased beyond their curricular level after a creative arts program. The children's creative ability level was determined from criteria established by Lowenfeld and Brittain (1970).

A "convenience sample" of five female and three male mentally retarded, multiply handicapped preschoolers were tested on a curriculum of eight behaviors necessary for public school admittance. These behaviors included: self and environment; gross motor skills; fine motor skills; communication; dressing; toileting; eating; and, hygiene. The sample included both profoundly and moderately retarded children. The level of the eight behaviors was charted and compared to the chronological age of the children before the treatment.

A creative ability baseline was determined for the children during phase one. Tempera paintings and pencil and crayon drawings were collected at weekly 15 minute sessions for one semester and rated by two judges on the criteria developed by Lowenfeld and Brittain. The raters' scoring was averaged and the creative level of the child was recorded on the curriculum and age chart. During phase two, eight college students, who were enrolled in a course in creativity for the handicapped, individually designed an arts program for each of the children. The college students met with their assigned child for two, 20-minute periods each week for one semester. Each child's program was based on chronological age and the creative level determined by phase one. The programs were intended to raise the child's creative development level according to Lowenfeld and Brittain's model. This model consists of the following creative stages: advance in symbol; advance in control of the medium; advance from one stage to the next; advance in composition; advance in sophistication; and, advance in the description of the artwork.

The student teacher, the course instructor, and an independent judge rated drawings made before and after the art program on a scale from 1-5. Their ratings were averaged and the resulting pretest and posttest scores in creative development were compared. Videotapes were made of five children during the baseline phase and later in the learning phase. The instructor and college students noted an increased level of attention and enjoyment in these students. A questionnaire given to the college students elicited a mean rating of 1.28 on the importance of creative art programs for the students (one point represented very important on this scale).

One child in this experiment was not present at the end of the study due to illness. Advancement in the creative level of the children was

from 0 to 33 months. Two moderately retarded children achieved a normal development rate while the two other moderately retarded children advanced beyond the expected creative development for their chronological age. The three profoundly retarded children were divided equally into normal creative development, no creative development, and remarkable creative development. The statistical level of significance was set at the .001 level. Student teacher ratings of the increase in the preset criteria and advancement in creative development correlated at .64, using the Pearson product-moment formula. The author suggested that art activities can be used to supplement other remediation programs and can be useful in attaining visual perceptual skills.

Art Form: Visual Art (Drawing)
Disability: Poliomyelitis

Johnson, Frank A. & Greenberg, Robert P. Quality of drawing as a factor in the interpretation of figure drawings. Journal of Personality Assessment, 1978, 42(5), 489-495.

In this study, the authors gave an overview of the literature before their proposal to determine if figure drawings primarily reflect the subject's projection of psychological state, ability to draw, or some combinations of these two factors. They superimposed a "quality of drawing" factor on the data obtained in a previously published study (Johnson, F.A. Figure drawings in subjects recovering from poliomyelitis. Psychosomatic Medicine, 1972, 34, 19-29) which showed that drawings were not predictably related to incapacity.

Subjects were 32 convalescing polio patients (15 permanently paralyzed and 17 functionally recovered) and 32 control subjects carefully (matched on age, sex, education, marital status, occupation and locality). Each subject was instructed to draw a picture of a person in a bathing suit. Objective measures of size, completeness and movement were made on each of the drawings, and four raters independently ranked the drawings for quality. A compass was used to determine height of the figure and size of the head, neck, trunk, and extremities. In scoring movement, a protractor was used to determine degrees from a physiologically neutral position a body part was shown. Completeness of each figure was scored on inclusion of body parts in each of the five body regions (head, neck, trunk, upper extremity, lower extremity). Quality of drawing was determined by having the four raters rank order all 64 drawings on the basic quality using any criteria they thought suitable such as proportionality, naturalness and aesthetic appeal.

Results showed that ranking correlations between judges were highly significant ($p < .001$). The average rank order correlation between judges was .87. When Pearson product-moment correlations were computed between all possible pairs of judges, correlations ranged from .74 to .88 with an average correlation of .83 (all ps $< .001$). For purposes of the analyses of variance, an average ranking across all judges was obtained for each drawing and the drawings were then split at the median into high and low quality groupings. A Chi-square analysis was used to assess whether the groups differed in the number of drawings falling into the high and low groupings. The analysis revealed no significant difference: 13 drawings from the experimental group ranked in the high category and 19 in the low; whereas, the controls placed 17 in the high and 13 in the low. When analyses of variance were used to compare the subjects on 17 different measures of drawing size, completion and movement, results showed that quality of drawing was a significant factor in 13 of the 17 comparisons while disability status was significant in only one of 17 comparisons.

The results showed that a "quality of drawing" factor can be readily and reliably rated in human figure drawings, and that in some cases, quality factors may be the overwhelming determinants of judgments made about figure drawings. Factors of differential abilities in eye-hand coordination and practice in drawing are relevant to the type of figure portrayed by any subject, and one must be careful not to over "psychologize" human figure drawings.

Art Form: Visual Art (Drawing)
Disability: Emotional
Maladjustment

Arkkell, R. N. Naive prediction of pathology from human figure drawings. Journal of School Psychology, 1976, 14(2), 114-117.

Acknowledging that there is considerable controversy about the interpretation of children's human figure drawings, the author investigated the degree of accuracy of five groups of judges (elementary school administrators, elementary school secretaries, elementary school teachers, seventh grade students, and trained personnel in figure drawing interpretation) in inferring pathology in human figure drawings. One human figure drawing was obtained from each of 20 children, age range 7 to 9 years; 10 children were judged by their teachers and administrators as being free from serious emotional disturbance, and ten had been diagnosed as emotionally maladjusted by mental health clinicians. The whole person drawings, with no identifying information, were randomly intermixed and numbered from 1 to 20. The drawings were placed in a booklet and were presented in an individual testing session to 10 randomly selected teachers, 10 administrators, 10 secretaries, 10 students, and 10 trained personnel. The scorers were all read the same instructions which essentially said to determine which drawings were made by normal children and which by maladjusted children.

To determine the results, a one-way analysis of variance was performed with the dependent variable being the scores (right, 1 point; wrong, 0 points) obtained in sorting the figure drawings and the independent variable being the five categories of judges. On classifying the drawings, the teachers were correct in 81% of their judgments; the administrators 79%; the secretaries 80%; the students 79%; and the professionals 83%. Results of the one-way analysis of variance revealed no significant differences among the five categories of judges ($p < .05$). The findings of this study suggest that human figure drawings may aid in the identification of emotional maladjustment in children ranging in ages 7 to 9, but that the ability to identify such drawings is not specifically related to training or systematic observation.

Art Form: Visual Art (Drawing)
Disability: Learning Disabled

Bachara, Gary Henry; Zaba, Joel N., & Raskin, Larry M. Human figure drawings and LD children. Academic Therapy, 1975-76, 11(2), 217-222.

Using the human figure drawing (HFD), a projective instrument, this study investigated the emotional functioning in children with specific learning difficulties as well as problems of eye-hand coordination, teaming, tracking focusing and visualization patterns. Subjects were two groups of 35 children matched by age (5 to 13 years) and sex (40 boys and 30 girls). All children were functioning at least in the low average range of intelligence as shown by the Koppitz Developmental Scoring System and independent psychological testing. Children in the experimental group showed difficulties in a normal school environment, showed signs of visual problems, and were subsequently given a visual examination. Children in the control group were not experiencing apparent visual problems or having academic difficulties.

All children were asked to draw a whole picture of themselves and not to make a stick figure or cartoon. The drawings were scored according to the emotional indicators established by Koppitz. The drawings were assigned code numbers so that neither scorer knew the group or identity of any child. Developmental visual examinations were given to evaluate the visual processing abilities of the subjects.

When the HFD scores of the two judges were compared, the interscorer reliability correlation was .87. There was a significant difference ($p < .05$) between the mean number of emotional indicators made by the experimental group (2.91) and the control group (1.45). The standard deviation for the experimental group was 4.43, while that for the control group was 1.16. Chi-squares, with Yates' Correction for Continuity, were computed for the Koppitz emotional indicators, as well as for another indicator, "excessive attention to the eyes," which was found in the drawings of nine of the experimental group and none of the control group. Two of the original 30 Koppitz indicators were found to occur significantly more in the experimental than in the control group: signs indicating the presence of feelings of inadequacy ($p < .05$), and signs indicating a general sense of insecurity and helplessness ($p < .001$). "Excessive attention to the eyes" was significant at $p < .001$. Three or more emotional indicators in a drawing showed that an emotional problem might exist; the drawings of 20 of the experimental group and only five of the control group contained more than three emotional indicators which approached being a significant difference ($.05 < p < .10$).

In addition to the attention to the eyes, the types of errors that the experimental group displayed with a significantly higher frequency were figures with the omission of hands and/or feet. The experimental children did not appear to have an excessive amount of anxiety; rather, their drawings reflected feelings of lack of direction, lack of footing, lack of self-assurance, and feelings of insecurity, inadequacy, and inferiority that seem typical of children having difficulty in school. If one takes stock in projective instruments, the HFD might be used in screening for emotional functioning among children with specific visual and learning problems as many of the children in this study were aware of their problems, i.e. eyes.

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Art Form: Visual Art
Disability: Learning Disabled

Gair, Sondra B. An art-based remediation program for children with learning disabilities. Studies in Art Education, 1975, 17 (1), 55-67.

This study investigated whether an art-based visual remediation program could increase the psycholinguistic, perceptual skills of learning disabled children. The author hypothesized that children with learning disabilities could significantly increase their scores in visual reception, visual association, visual closure, visual sequential memory and manual expression, as measured by the Illinois Test of Psycholinguistic Abilities (ITPA)(Kirk, et al., 1968) after receiving training in the Gair Method of Visual Remediation (GMVR)(Gair, 1973). Gair also hypothesized that there would be a significant increase in the receptive-expressive scores of learning disabled children as measured by the Gair Art Rating Scale (GARS)(Gair, n.d.). The author based these hypotheses on the assumption that the creation of art, the appreciation of art and the naming of art increase a child's visual awareness of reality and help him/her understand the world around him/her. Gair noted that through art-oriented perceptual remediation, a subject is helped to cope with form on all levels by integrating his/her visual and verbal capabilities and communicating his/her subconscious creativity.

Twenty learning disabled children ranging in ages from 7-12 with a mean IQ of 102 were administered the five visual subtests of the ITPA. At this time a two-part art task was given to the children. Task A involved having the children draw a simple design and task B consisted of having each child draw a self-portrait. There was no control group involved in the experiment and there is no indication that the subjects were randomly selected.

The subjects then received a seven-week training program in the GMVR concentrating on four major areas of looking, listening, saying, and doing. The program was taught by the classroom teacher and lasted one hour per day for five days each week. The children looked at 140 programmed slides which were divided into the seven major concept areas of: variation and and similarities through pattern; outline through shape; using negative and positive space to see figure-ground relationships; aesthetic identification by using scanning and focusing; using dots and lines to identify rhythm and movement; using light, dark, and texture to view two and three dimensional shapes; and, using structure to see whole-part relationship and visual analogy. Cassette tapes were used in conjuntion with the slides to relate certain visual stimuli with verbal cues. Twenty-eight art tasks were also presented during the treatment.

The five visual subtests of the ITPA were administered again at the end of the GMVR training period. The art tasks were also repeated and evaluated with the pre-program tasks by the Gair Art Rating Scale. The GARS was used to assess the specific accomplishment level of perceptual training as evidenced by the tasks. A raw score was yielded for each drawing.

The results of this study indicate that there was an increase in the ITPA scores in visual reception, visual association, visual closure, visual memory, manual expression and receptive-expressive execution at a significant level determined by t-tests. T-tests also showed a significant

difference at the .01 level in the pre-test/post-test data of the twenty items on the GARS in all but three items. Other data indicates that the children who scored the highest on the ITPA subtests used the visual association learning channel while these subjects who used visual memory received lower scores on the ITPA.

Pearson Product Moment correlations showed a high correlation between all ITPA pre-test scores and ITPA post-test scores. The GARS pre-test scores were correlated at .359 with the GARS post-test and only the manual expression ITPA subtest shows a positive low correlation with the GARS.

The author concluded that the GMVR program could successfully use visual expression as a specific psycholinguistic channel and that art-based learning can help children learn at the non-cognitive level of functioning as well as the logical-conceptual level.

Art Form: Visual Art (Drawing)
Disability: Learning Disabled

Netley, C. Prismatic adaptation and visual-motor skills in children with learning disabilities. Journal of Learning Disabilities, 1973, 6(6), 377-382.

In order to determine the mechanisms underlying learning disabilities, this study examined system improvement of input, output and transfer in relation to disorders of drawing. The three types of impairments were defined as follows: Perceptual (inability to analyze sensory input); Motor (disorder of output); and Sensory-motor integration (poor transfer between the input and output systems). The subjects, two groups of 15 boys, were selected from the children referred to the Hospital for Sick Children in Toronto because of problems in academic achievement despite at least average IQ. The groups were matched for mean age and WISC IQs, but the boys in the experimental group had error scores on the Bender Gestalt Test (Koppitz, 1964) at least one standard deviation above normal; whereas, the boys in the control group had Bender scores within normal limits.

Subjects were tested individually on the following three procedures to determine the system impairment underlying their drawing deficiencies: Guessing game (serial organization of elements in a complex stimulus array, i.e., various colored pieces called out to examiner to make a pattern); Motor skills test (transfer of pieces, square by square, from one box to another while blindfolded); and Prismatic Distortion (adaptation to the effects of prismatically induced transformation of visual input tested via moving pointer to designated color squares with and without prismatic glasses over several trials).

Results showed that for the guessing game, the experimental group required significantly more guesses to complete the test than the controls ($p < .02$). In the motor skills task the two groups did not differ significantly. When t-test comparisons between the groups were calculated for each of the conditions of the prismatic distortion experiment, there was no statistically significant difference between the groups except that the experimental group tended to show significantly larger errors in the first block of 20 trials. Generally, the results can be interpreted to show: (a) Children with poor copying ability do not differ from controls in the speed with which they perform a motor task; (b) They do appear to show a defect in perceptual skills (sequential analysis of visual array); and (c) They do seem to have irregularities in the relationship between visual and motor systems.

Art Form: Visual Art (Drawing)
Disability: Learning Disabled

Raskin, Larry M. & Bloom, Allen S. Kinetic family drawings by children with learning disabilities. Journal of Pediatric Psychology, 1979, 4 (3), 247-251.

The author investigated the Kinetic Family Drawing projective technique (KFD)(Burns & Kaufman, 1970) with two age groups of learning disabled children hypothesizing the drawings would indicate related feelings of isolation-rejection, body concerns, and sibling rivalry. The KFD technique requires that the child draw a picture of everyone in his family, including the drawer, "doing something". In this study, the Human Figure Drawings (HFD) in the KFDs were scored by the Koppitz (1968) system.

The subjects were 50 children (33 boys and 17 girls) referred to the Child Evaluation Center, University of Louisville School of Medicine, Louisville, Kentucky. They had primary learning disabilities defined as significant academic delays relative to level of functioning and not accounted for by primary emotional factors, sensory impairments, or brain damage. The children ranged in age from 6 yr. 2 mo. to 16 yr. 8 mo. with a mean age of 10 yr. 4 mo. As determined by the Wechsler Intelligence Scale of Children, revised, all children had at least low-average intelligence with the mean full-scale IQ being 94.2. The 50 children were divided into two groups by a chronological age median split in order to determine age-related differences for KFD emotional indicators.

The KFDs were scored by two independent specialists who gave attention to characteristics of the drawings indicating feelings of isolation-rejection, body concerns, and sibling rivalry. Isolation/rejection was scored as being present if a physical object or a wall separated the drawer from all other family members. Body concerns were scored if there was an exaggeration or omission of expected body parts, excessive shading or asymmetry of body parts, or the drawings of grotesque figures in the self-portrait. Indicators of sibling rivalry were aggressive actions by the drawer toward a sibling or vice versa.

Interjudge ratings were reliable in that there were not disagreements on scorings of isolation-rejection or sibling rivalry and only one on signs of body concerns. Using chi-square with Yates' Correction for Continuity to analyze the frequency of the indicators, there were no significant differences in the frequency of KFD indicators between the two age groups.

The study did not find an age-related difference in KFD indicators for learning disabled children. The negative findings could be owing to a number of factors including small numbers of subjects and methodology.

Art Form: Visual Art
Disability: Learning Disabled

Silver, Rawley A. & Lavin, Claire. The Role of Art in Developing and Evaluating Cognitive Skills. Journal of Learning Disabilities, 1977, 17 (7), 416-424.

In this study, the authors investigated whether the art procedures the senior author used for assessing and remediating language and hearing impaired children (Silver 1973, 1975) would be useful with children who have verbal skills and visual-motor weaknesses, and whether the procedures could be used effectively by teachers other than the one who developed them. The 11 children in this study were not selected, but were the first to enroll in art classes offered to members of the Westchester Association for Children with Learning Disabilities through the College of New Rochelle, New Rochelle, New York. Although no profiles were given for the children used in the study, it was said all had "disabilities of visual-spatial motor nature." The subjects included seven boys and four girls ages 7 to 11. The 11 graduate students who worked with the children were not selected but had registered in an elective course in therapeutic techniques in art education in the Master of Arts Program, College of New Rochelle.

The children attended 10 one-hour classes on Saturday mornings working together under the supervision of the course instructor. The graduate students attended three lectures before the program began, arrived before and stayed after the children each Saturday. At the completion of the program, six of the graduate students scored 44 pre- and posttest drawings which were presented in random order and marked only by number.

The special art procedures used with the children included the following teaching and testing tasks: Task 1, Ability to form groups in drawings from imagination; Task 2, Ability to perceive and present spatial relationships; and Task 3, Ability to order and conserve in manipulating objects, modeling clay and painting. Task 1 involved spreading 12 drawings of people on one table and 12 drawings of objects on another, having the children choose one or more cards from each table and drawing a story-telling picture about them without copying the original cards. Remediation for Task 1 consisted of giving the children opportunity to associate and reflect on a group or class of objects, to select and combine colors, shapes and subject matter while drawing from imagination. The children's first and last drawings from imagination were scored on a continuum from 1 to 5 on the following five aspects: ability to select; ability to combine; ability to represent; ability to express verbally; and, ability to express nonverbally. Task 2, the ability to perceive and present spatial relationships, involved having the children sketch an arrangement of four items on a plane during the pre- and posttest. Their drawings were scored on left-right relationships, above-below relationships, and front-back relationships. Remediation tasks in this area consisted of drawing similiar objects placed in the center of the room and sketched from different angles. Task 3, ability to order and conserve in manipulating objects, was based on a text by Bruner and Kenny (1966) and the Piagetian task of conserving liquid. Scoring involved three aspects: whether the child could replace the cylinders (1 pt.); whether the child could reproduce the matrix (3 pt.); and, whether the child could transpose the matrix (5 pt.). Remediation in this area involved modeling clay from imagination, mixing paints, and experimenting in conservation of solids.

Results showed that for "the ability to form groups" task, the interjudge reliability coefficient was .852. For the spatial orientation task, the interjudge reliability coefficient was .944. When the effectiveness of the program was evaluated by using a t test for correlated means, all the obtained t values were statistically significant. The improvement in Task 1 and Task 2 was significant at the .01 level; whereas the improvement in Task 2 was significant at the .05 level.

Although the authors indicate the findings support their hypothesis that learning disabled children show statistically significant improvement in the three areas of cognitive development under consideration (forming groups, spatial relationships, ordering and conserving) when taught by art procedures developed for children with communication disorders, several weaknesses in the research design are inherent. Although this study would be impossible to replicate because of the highly selective samples, the results need to be verified in similiar investigations.

Art Form: Visual Art
Disability: Learning Disabled

Walker, Barbara C. The relative effects of painting and gross-motor activities on the intrinsic locus-of-control of hyperactivity in learning disabled elementary school pupils. Studies in Art Education, 1980, 21(2), 13-21.

This study investigated whether painting and gross-motor activities would improve the intrinsic locus-of-control of hyperactive children. The author hypothesized that hyperactivity would decrease in learning disabled children if they were involved in tasks that increased their attention. The author believed that painting and gross-motor activities would increase attention-to-task behavior in hyperactive children.

Four elementary school students were selected because of their similarity on attention-to-task behavior, from a sample of 12 children previously diagnosed as learning disabled and hyperactive. Attention-to-task behavior was determined to be the time each student kept eye contact with teacher assigned tasks and assignments. Two observers recorded baseline data in the attention-to-task behavior of the 12 students with a 92% agreement. The 12 children in the sample were students at a suburban Indiana community school corporation and none of them were on medication prescribed to control hyperactivity. An ABAB reversal design was utilized in this investigation. Phase A, included all 12 students in the collection of attention-to-task data. The four children with similar baselines were randomly divided into two equivalent groups for the remaining phases.

In the B phase, Group 2 began painting activities while Group 1 began a gross-motor activity program. Each session lasted for 30 minutes, was held early in the day, and the program lasted for five days. The painting activity program consisted of allowing the children to paint whatever they desired, clean-up and to discuss their reactions to the program. Motivational themes were suggested but not mandatory and the students were urged to creatively express themselves through the techniques of color, line, shape, space and texture. The gross-motor program consisted of running, skipping rope, tossing balls and bean bags, jumping, bouncing balls, and discussing the children's reactions to the activities. The author observed and recorded attention-to-task at varying times during the day for both programs.

Phase A2 involved removal of the treatment and a return to the baseline with observations made by a trained observer. During phase B2 the experimental treatments were reversed so that Group 1 began the art program and Group 2 began the gross-motor program. Otherwise the procedure was the same as in phase B1.

The author evaluated the data by behavior evaluation research procedures. The mean improvement of the mid-frequency in attention-to-task from the baseline to the painting activity was 1.7 and from the baseline to the gross-motor activity was 1.5. The author noted that this meant attention-to-task increased almost 2 x the frequency recorded during the baseline phase. For three children the art activity proved to be most effective while the gross-motor activity was the most effective for one child. The author indicated that a standard celleration is equal to a change of 25% per week. In this study one student changed more than 25% per week; one student had a 25% change; one student had a 20% change; and one student had a 10% change.

Art Form: Visual Art
Disability: Learning Disabled

Wood, Nancy C. Directed art, visual perception, and learning disabilities. Academic Therapy, 1977, 12 (4), 455-462.

Noting the controversy surrounding the Frostig Developmental Test of Visual Perception (DTVP) and the Frostig Developmental Program of Visual Perception (DPVP), the author conducted a study to determine if directed art activities could increase visual perception in learning disabled children as measured by the DTVP. The subjects were eight children (mean chronological age 9.3 yr.), seven of which scored 90 or below on the Perceptional Quotient (PQ) of the DTVP indicating a visual-perceptual disability. Random selection was not indicated, nor was the sex or socioeconomic background of the children. Also weakening the research design was the small number of subjects in the sample. On the math and reading subtests of the Wide Range Achievement Test (WRAT) (Fastah, 1976), the mean score of the children was 2.58 for math and 3.31 for reading. On the Peabody Picture Vocabulary Test (PPVT) (Dunn, 1965), the mean was 105.75 with a 26.95 standard deviation. Using the Draw-A-Person Test (DAP) (Urban, 1963), the mean raw score was 27.13, and the mean standard score 91.75.

The treatment was eight weeks of directed art activities (duration of sessions and number of sessions not indicated) focusing on the following abilities: visual-motor coordination; figure-ground perception; form constancy; position in space; visual, tractile and auditory awareness; body image; and closure. Some of the art activities included macrame, discovering shapes in blown paint designs, designing pictures with geometric shapes, three dimensional designs, drawing picture of food after eating it, tracing body outlines on paper, and completing half of a picture cut from a magazine.

Posttest scores at the end of the eight weeks indicated an increase of 11.62 points on the DTVP, significant at the .01 level of confidence when the pre- and posttest raw scores were compared. Pretest and postest learning quotients were compared and showed that visual-perceptual functioning improved for the children. The increases in posttest scores could have been caused by a number of variables. Art activities can provide visual-perception remediation for most learning disabled children, but the increase and duration can not be substantiated by this study. Likewise, further research needs to be done to document the usefulness of some activities to the development of perception in reading.

Art Form: Visual Art (Drawing)
Disability: Visual perceptual dysfunction

Miller, Sydney R.; Sabatino, David A. & Miller, Ted L. Influence of training in visual perceptual discrimination on drawings by children. Perceptual and Motor Skills, 1977, 44(2), 479-487.

Commenting that there has been resistance among art educators to use programmed perceptual remedial instruction, such as the Frostig program, because they feel it stifles the creativity of children, the authors undertook this study to determine if such remediation affects children's artistic expression in drawing.

The subjects, 34 girls and 78 boys, ranging from 6 to 10 years of age, were selected from three Pennsylvania communities' regular public school classes where they were receiving resource room aid for "underachievement" defined as limited word recognition skill in reading. All had at least normal intelligence, no evidence of behavioral disorders, intact families and no visual or hearing problems. One-half of the 112 children selected showed visual perceptual deficits as measured by Bender Visual Motor Gestalt Test using the Koppitz (1963) scoring procedure; the other half demonstrated average or above average scores on the same test. In all, 56 children with visual perceptual deficit problems (learning disabled) and 56 with nonvisual learning disabilities were tested. Each of the groups of 56 children were then randomly assigned to one of three instructional or one control group.

Each child received instruction in one of the three visual perceptual remediation programs for 30 minute periods daily each week during a 12 week period. The resource teachers worked with groups of four children during each session using a specific type of visual perceptual remediation; regular classroom teachers and the itinerant art teacher did not deviate from their normal instructional procedures. The three different programs used by the three different treatment groups were: the Merrill Linguistic Reader; the Frostig Program for the Development of Visual Perception; and, the Early Childhood: Form Constancy Program. The control group did not use any material which might alter visual perception but spent their time in direct remedial work.

Pre- and posttest drawing measures were collected from all subjects by five graduate students in art education. Each subject was given a box of crayons and drawing paper and told to make a drawing depicting the theme of a story they had just been told. A graduate student asked each child to identify the character in the story that represented him/herself and noted this on the back of each drawing. The pre- and posttest drawing scores were obtained by the five graduate students (judges) on seven dependent variables: Non-differentiated vs. Differentiated (more or less attention to detail); Static vs. Dynamic; Replicative vs. Abstract; Non-awareness of Social Situation and Self vs. Awareness of Social Situation and Self; Specific Placement vs. Less Specific Placement; Expression of Theme vs. Non-Expression; and, Less Aesthetic vs. Aesthetic. In each case, the judges had both drawings by each child but did not know when either of the two drawings was made. Inter-rater reliability estimates among the judges on each of the seven variables ranged from .99 to .81.

Using a 2 x 3 analysis of variance to test the difference between the two groups of subjects for each intervention, results showed that none of the F ratios were significant for means of the visual perceptually and non-visual perceptually impaired groups for any of the seven dependent variables. When data were subjected to 1 x 4 analysis of variance to determine the differences among three training programs and the control group, only a single F ratio on the variable reflecting the child's ability to see himself in the theme was significant ($F = 3.49$, $p < .01$). A t-test for multiple-means contrast produced a value of 3.32 showing a significant difference between the control group and the three treatment groups. Further analysis of the data also showed that neither the significant difference test nor trend analysis supported the hypothesis that non-visual perceptually impaired subjects demonstrated greater changes following remediation than those with visual-perceptual impairment. The contention that perceptual remedial instruction will affect children's drawings was not substantiated. Also, no differences appeared among the treatment groups and controls when administered the motor and motor-free instruction. Results of this study showed that when children with both visual and non-visual perceptual impairment have academic difficulties and are given visual perceptual remediation, their artistic ability will not be disrupted.

Art Form: Visual Art (Drawing)
Disability: Mentally Retarded,
Behaviorally Disordered,
Learning Disabled

Ireton, Harold., Quast, Wentworth., & Gantcher, Phyllis. The draw-a-man test as an index of developmental disorders in a pediatric outpatient population. Child Psychiatry and Human Development, 1971, 2(1), 42-49.

The purpose of this study was to determine whether the Draw-A-Man test (DAM) (Goodenough, 1926; Harris, 1963) could be utilized as a screening device to assess children's general "index of psychological functioning" (IF) and other cognitive disorders such as: learning disabilities, speech problems, retardation, perceptual-motor disorders and visual-perceptual problems. Further the authors also were hopeful that the DAM test could be reliably administered and scored by staff with a minimum of training.

After one training session, nurses gave the DAM to all children (4 to 6 years of age) in the University of Minnesota Medical Center Pediatric Clinic. The nurses also scored the DAM and identified 38 children who scored below 85. This IF score of 85 or below had been established in an earlier study (Quast, 1966) as a fairly good indication that some psychological deficiencies were present and that follow up diagnostic testing was indicated.

The 38 children identified as having IF scores on the DAM of 85 and below (using the Goodenough/Harris 1956 revised scoring system) were about 19% of all the children seen in the clinic over a nine month period. All but two of the 38 children already had other diagnostic evaluations as a part of their medical files. These 36 cases were evaluated independently by two psychologists. These psychologists' evaluations concurred in all but one of the 36 cases. The children were grouped based on information in their medical files under five categories: 1) retarded; 2) emotionally disturbed (not related to being retarded); 3) learning problems other than retardation; 4) other neurological impairments unrelated to one and three above; 5) other medical disorders uncomplicated by any of the above. These results were compared with the DAM scores in an earlier study (Quast, 1966) of a general sample of pediatric cases. The ages of subjects in both studies were matched (8 years was the median age). There was a higher number of males in the IF group (78% vs 64% in the Quast, 1966 study).

The DAM test scores for the 38 children assessed by the nurses were recorded by a psychometrist who was naieve (i.e., did not know the nurses' scores, or the age, sex or medical problems of the children). The mean score assigned by the nurses was 75.1, the mean score assigned by the psychometrist was 72.9. In 19% of the cases the IF scores were identical.

The 38 test positive cases (those receiving a score of 85 or below on the DAM) were compared with expected incidence of specific disorders in the general clinic sample. The test positive sample had a significantly higher occurance of neurological and psychological problems (chi square = $p < .001$ on mentally retarded, behaviorally disordered, and other medical problems; $p < .05$ on other learning problems). The incidence of neurological problems not related to any of the other problems was not significant for the test positive group.

The authors caution the use of the DAM as solely an assessment of intellectual functions. They conclude that the DAM can be useful as a means of screening childen who may have significant cognitive and behavioral disorders as well as intellectual retardation. The utility of the DAM is enhanced by the fact that medical people such as nurses can reliably administer and score the DAM with only a brief training session. Once such screening occurs, and children who score 85 or below are identified, other more sensitive psychometric measures can be applied to more specifically pinpoint developmental disorders.

Art Form: Visual Art
Disability: Learning Disabled
Language & Hearing Impaired

Silver, Rawley A. Using art to evaluate and develop cognitive skills. New Rochelle, NY: College of New Rochelle, 1975. (ED 116 401)

This document reports the results of two experiments. The first experiment attempted to investigate whether children with language and hearing impairments could acquire the concepts of space, of a class of objects and of sequential order, through art experiences. The second experiment examined whether learning disabled students could use art experiences to acquire these same concepts.

The sample for the first experiment included 18 children in an experimental group and 18 children in a control group who were randomly selected from three classes in a school for the language and hearing impaired. Mean ages and IQ's were not reported. A case study presented within the documents reports on a boy of 13 years, Burt, who had a loss of 75 db in his best ear, and a Stanford Binet (NG) IQ score of 43.

The treatment consisted of 11 art periods. The first period involved showing the children an arrangement of four toy animals. The children then selected the animals from a group and attempted to place them in the same order on sheets of paper. After this task children were allowed to draw or paint whatever they chose to. During the second period students were asked to select one or two 3 x 5 cards depicting people and large animals or objects and small animals. Then they drew their individual interpretations of the pictures. The third art period consisted of mixing paints and introducing the students to painting with palettes, palette knives, brushes, and poster paint. Session 4 involved the use of two equal balls of clay, one of which was rolled into a "hot dog" and then back into a ball. After each manipulation of the clay children were questioned about the amounts of clay and asked to explain their answers. The cards used during period 2 were again used in the fifth art period. The sixth art period was identical to period 1. Periods 7, 8, and 9 were spent having the students draw from observations. Art periods 10 and 11 were used for child chosen activities in drawing, painting, or clay modeling. The students were evaluated prior to and after the art treatment on 14 cognitive skills. The author reports that the increase in the experimental group's scores were significant at the .01 level when compared to the control group's scores.

The second experiment reported the results of an investigation to determine whether 11 graduate students in Therapeutic Techniqes in Art Education at the College of New Rochelle could successfully implement the procedures involved in the first experiment. The children in this experiment were included in the art therapy as their applications were submitted subsequent to a newspaper announcement of art classes for the learning disabled. Children attended 10 weekly one-hour art sessions. Before the program the graduate students attended three lectures. They also discussed teaching plans for a half an hour prior to each lesson and discussed results for a half hour after the art sessions.

Pre and post experimental drawings were evaluated by six of the graduate students on the basis of cognitive development. The inter-rater reliability of the judges was .852 for ability to form groups and .944 for spatial orientation. The drawings were presented for scoring in a random manner and were not labeled by the children. The results of the test indicate that there was a significant improvement: in the ability to select

and combine at the .01 level of confidence; in the ability to order a matrix at the .01 level of confidence; and in spatial orientation at the .05 level of confidence.

The author suggests that these findings indicate the usefullness of art experience in evaluating and developing the cognitive skills of learning disabled children and hearing and language impaired children. She also notes that art therapists and teachers can be successfully taught to employ these art procedures.

Art Form: Music
Disability: Deaf

Korduba, Olga M. Duplicated rhythmic patterns between deaf and normal hearing children. Journal of Music Therapy, 1975, 12, (3), 136-146.

The purpose of this study was to investigate whether deaf and normal children could duplicate rhythms accurately on a snare drum after watching someone play them on a base drum. The null hypothesis stated that there would not be a significant difference in the errors made in duplicated rhythm patterns between deaf and normal hearing children. Deafness was defined as "the inability to hear sound under 85 decibles above the threshhold of hearing."

The 15 deaf children in this study were evaluated at the third-grade achievement level. The 15 normal hearing children were selected randomly from the third grade population. All students were enrolled in Arcola Lake County Elementary school in Miami, Florida. The deaf students ranged from age 8 through 12 years.

The author modified the score of the Kwalwasser-Dykema Rhythm Discrimination Test (n.d.) so it would be simple enough for this group of children. The test became more difficult with more tones and variations of rhythm patterns as it progressed. After an electric metronome established the tempo, alternating deaf and normal hearing children watched as the test's rhythmic stimuli were each played twice on the base drum. Then the children attempted to duplicate the rhythm on a snare drum. Twenty rhythmic patterns and the children's duplications were recorded and judged by the author and another music educator. The duplications were evaluated based on whether the correct number of notes was present and whether the rhythm was correct. Accurate responses were indicated by no audible differences from the setting of the metronome or close approximations to the setting.

Deaf children averaged fewer errors on the 20 rhythmic patterns in both beat and rhythm than the normal hearing children. Three one-variable Analysis of Variance, using hearing ability as the independent variable, were done. The three variables analyzed were beat error scores, rhythm error scores, and a combination of these measures. The difference in beat error scores, and combined scores was significant at the .05 level of confidence. There was no significant difference in rhythm error scores. Spearman's coefficient of rank correlation results indicated a positive relationship, significant at the .01 level, between the beat and rhythm error score variables for both groups of children.

The author noted that the deaf children used visual and kinesthetic sensory channels and seemed to pay more visual attention to the examiner than the normal hearing children. They suggested that future studies should control eye contact with the examiner in order to investigate the influence of visual attention on rhythmic responses. The author also stated that the deaf children improved during the last part of the 45 minute testing session. They indicated that this may suggest the need for longer instructional sessions for deaf children.

Art Form: Music
Disability: Mentally Retarded

Bellamy, Tom & Sontag, Ed. Use of group contingent music to increase assembly line production rates of retarded students in a simulated sheltered workshop. Journal of Music Therapy, 1973, 10 (3), 125-136.

This journal article reports the results of two experiments. The purpose of these experiments was to evaluate the use of music as a group contingent consequence with mentally retarded students. The authors investigated whether music utilized as a group contingency consequence would increase the assembly line production rates of retarded workers.

The sample for the first experiment included four students with a mean chronological age of 12-1, a mean Stanford-Benet (n.d.) IQ score of 42, and mental ages ranging from 4-5 years to 5-9 years. The experiment took place in a classroom setting after the students received two, 45-minute training sessions and five 10-minute practice sessions. The assembly line task included the following steps: the first student stapled a small sheet and a large sheet together; the second student placed the sheets in a manilla envelope; the third student added an index card and an insert in each envelope; and the fourth student sealed the envelope and packed it into a box with the address side up. Envelopes with misplaced staples, mutilated papers, incorrect content or envelopes that were not sealed or boxed correctly were classified as incorrect envelopes.

During Phase I a baseline was established. Students worked for 10 minutes on the task without music or feedback. Phase II was identical to the first phase except that continuous music was played during the work period. During the third phase music was played for 30 seconds only after the completed envelope was placed in the box. Phase IV was the same as Phase III except only 20 seconds of contingent music was played. Phase V involved a reversal. This phase was the same as Phase II. Children's Sing-Along by Frank Luther was chosen by the students as the music to be used during Experiment I.

The median number of envelopes finished during Phases I, II, III, IV, and V were 15.2, 19.0, 20.0, 27.5, and 20.0, respectively. A Mann-Whitney U test using a one tailed test significant at the .01 level revealed that Phase IV production rates were significantly higher than Phases II and V.

The seven Experiment II subjects had a range in age from 13 years to 20 years, with a mental age range from 6-8 to 9-8 years, and a mean IQ of 46.8. The task of the assembly line included the following steps: Subjects 1 and 2 put 14 drapery hooks into two different loaders; subjects 3 and 4 used these loaders to put the hooks into plastic bags; the fifth subject put a retail label across the top of each bag and stapled the left side; the sixth subject stapled the right side; and the seventh subject punched a hole through the middle of the label and packed the bag into a box. Packages with crooked labels, and misplaced holes and staples were considered to be faulty.

During Phase I, the subjects worked for 10 minutes with music in the background. In Phase II a volume attenuator was used to decrease volume gradually over a 17 second time period unless reset. The subjects were told that the music would begin after a product was placed into the box but would fade again unless a new product was soon finished. Phase III involved a return to Phase I conditions. Phase IV involved a return to the treatment

conditions used in Phase II. The final phase, Phase V was again a return to Phase I condition. The music was chosen from available records by the subjects.

The Mann-Whitney U-test utilizing a one tailed test significant at the .01 level determined that the treatment in Phases II and IV resulted in higher production numbers than baseline phases. The authors conclude that group contingency procedures are effective with the mentally retarded in increasing assembly line production. The authors suggest that future studies should attempt clearer demonstrations of experimental control. Sample selection procedures were not reported in these investigations.

Art Form: Music
Disability: Mentally Retarded

Bitcon, Carol H., & Ball, Thomas S. Generalized imitation and Orf-Schulwerk. Mental Retardation, 1974, 12 (3), 36-39.

This study investigated the extent to which the Schulwerk method enhanced the development of severely retarded adolescents in generalized imitative behaviors. The Schulwerk method consists of simple composition in a group setting. The rondo form is used as each member of the group participates together in the development of a theme and then each in turn adds a creative individual contribution for rondo development.

A group of 23 profoundly and severely retarded adolescents were administered a pass/fail test of four gross motor control skills and four fine motor skills. The 15 adolescents who scored 1 or 2 out of 8 possible points were selected for this study. The control group also contained one youth who scored a 3 on the test. The experimenters then used stratified random samples to assign the youths to an experimental or a control group. The mean age for the experimental group was 17.8 years and their mean IQ was 13.9. The mean age of the control group was 16.5 years and their mean IQ was 15.8.

The test of motor skills consisted of having the adolescents imitate the physical behavior of the examiner. The four gross motor skills tested were: shake head no, fold arms across chest, bend over with hands toward the floor, and extend arms directly out from shoulders. The four fine motor skills were: blinking the eyes, popping lips out from teeth, circling the right hand in a clockwise motion towards the ceiling, and sticking the tongue out of the mouth.

The two groups met separately, four days per week from 8:30 a.m. to 9:15 a.m. over a nine-week period. The experimental group was randomly given one of three Schulwerk programs. The programs consisted of having the participants sit in a circle chanting together and then individually contributing with a return to the chant between each individual's contribution. The activities included use of simple instruments, slapping thighs, clapping hands, playing drum beats, and imitating the individual leaders.

The control group spent their sessions listening to or singing along with records and a random selection of some of the following: rhythm band, playing with toys or clay, finger painting, coloring books, art tissue creations, or playing musical instruments.

Five probes were carried out during the course of the study to determine the participant's development in gross and fine motor imitation. Items one, two, and three showed a .96 agreement between the results of raters. The other fine motor and all of the gross motor ratings showed 100% agreement between raters. An analysis of variance was completed using a three factor analysis (groups x tasks x occasions) with repeated measures of the tasks and occasions factors. The authors reported that a .05 level of significance was attained, showing that the changes over occasions were a result of the treatment.

The means of the experimental group scores were found to be higher on the first probe than they had been at the pretest level and the means did not fall below the pretest level on the remaining probes. There was a significant difference at the .05 level in the mean of the experimental

group's pretest scores and the second probe. The scores of the experimental groups were also significantly higher at the .05 level than the control group scores on probes two and five.

In examining the experimental group scores, three youths increased their performance by the first or second probe and continued their improvement; three of the adolescents were unable to improve their test scores; and two had fluctuating test scores. In the control group, one youth exceeded his pretest performance on three probes and scored the same on the other two probes. The other participants showed random fluctuation in their scores. The authors concluded that the Schulwerk method may complement formal imitation training and may help motivate the children and increase their creativity.

Art Form: Music
Disability: Mentally Retarded

Cassity, Michael David. Social development of TMRs involved in peforming and nonperforming groups. Journal of Music Therapy, 1978, 15(2), 100-105.

The purpose of this study was to determine if the trainable mentally retarded (TMR) involved in music-athletic, and athletic performing groups differ significantly in social development from the TMR not involved in such groups. The subjects were 27 residents of Belle Chase State School, Belle Chase, Louisiana. Subjects ranged in chronological age from 10 to 23 years, and in IQ from 25 to 50. The subjects were divided into three groups of nine each: (a) music-athletic performers; (b) athletic performers; and (c) nonperformers. Music performing groups consisted of a bell choir, drum corps, and a chorus; whereas, athletic performing groups consisted of a special team of athletes that participated in public sports events. Subjects were tested for IQ and MA with the Stanfard-Binet (Terman, 1960) and Wechsler (1974) intelligence scales. Perceptual age was measured with the Frostig Developmental Test of Visual Perception (Frostig, 1963), and self-adjustment, social adjustment, physical adjustment, and school adjustment with the Child Behavior Rating Scale (Cassel, 1962). The Vineland Social Maturity Scale (Doll, 1965) assessed social quotient, and adaptive behavior scores were derived from teacher ratings. Popularity was assessed by administering a popularity questionaire to eight subjects randomly selected from high level education classes (average IQ of 53) and eight randomly selected from low level education classes (average IQ of 33). The 16 subjects were individually shown pictures of 18 subjects (6 sets of 3 with each containing one nonperformer, one athletic performer, and one music-athletic performer) and asked to select 6 students with whom he would like to attend an outing.

Man-Whitney U Tests indicated that music-athletic performers scored significantly higher than nonperformers in 7 out of 10 measures of social development: MA, IQ, perceptual age, social quotient, physical adjustment, school adjustment, and adaptive behavior. Athletic performers scored significantly higher than nonperformers in 1 of 10 tests of social development, and approached a significant different in adaptive behavior. A popularity questionnaire revealed that lower IQ and higher IQ subjects differed significantly in the number of friendship choices given to members of each group.

Future studies should take into account that if TMRs do not possess the personal values that a personality test, such as the Child Behavior Rating Scale, is attempting to measure, the resulting test scores may be meaningless. Future researchers should construct more appropriate test measures for TMR subjects.

Art Form: Music
Disability: Moderately Retarded

Cotter, Vance W. Effects of music on performance of manual tasks with retarded adolescent females. American Journal of Mental Deficiency, 1971, 76 (2), 242-248.

The purpose of this study was to determine whether the presentation of preferred music improved work production rates when compared to periods of no music and also whether contingent music increased production rates more than non-contingent music.

The 16 moderately retarded girls in this study were all residing in the same cottage at the Parsons State Hospital and Training Center. The girl's ages ranges from 12 to 21 years and all were given the Cotter and Toombs (1966) music preference assessment which indicated they all preferred music over "white" noise and silence. The author also noted that all the girls were ambulatory, had binaural hearing capability of at least 20 dB for octave frequencies of 250 to 8000 Hz, and enjoyed "rock 'n roll" and popular vocal and instrumental music more than instrumental music alone.

The work task in this study involved placing two washers in an envelope, folding down the envelope flap, and dropping the envelope through a slot located on the adolescents right. Before the experiment the girls received two 30 minute training sessions and were then matched into pairs based on chronological age, mental age, or IQ. One girl in each pair was assigned to a contingent-music group or a non-contingent music group based on the number of tasks finished during the training periods. The matched pairs of girls each received 10 sessions divided into five, 15 minute segments. During the experiment, music periods were alternately presented with non-music periods. Five of the experimental sessions had three music periods and two silent periods while the other five sessions had three silent periods and two music periods. During the music segments the contingent-music girl was awarded 15 seconds of additional music for every completed task. The non-contingent girl received music only when the other girl did. Both girls wore headphones which were kept on during the 75 minute sessions.

The mean number of completed tasks during music and no-music periods of each session was analyzed by Winer's multifactorial model with repeated measures. This data indicated that an analysis of variance for music versus the no-music condition was significant at the .01 level. Mean task completion for both groups was 4.26 per minute during the music period 3.44 per minute during the silent period. The contingent music group worked significantly faster at the .05 level during the music segments than during the silent segments. They also were significantly faster at the .05 level of confidence than the noncontingent music group during the music segments. Other data shows that the contingent groups did not work any faster than the noncontingent group during silent segments. The noncontingent group was shown to have no significant increase in task production during music segments over silent segments. Work rates did not significantly change during the experiment for the contingent groups. The author noted that the noncontingent group increased task production during the final five sessions of the experiment.

The author stated that this experiment indicated that contingent music, does increase work performance. He also noted increased production during times when the girls danced or sang to the music.

Art Form: Music
Disability: Mentally Retarded

Dorow, Laura G. Generalization effects of newly conditioned reinforcers. Education and Training of the Mentally Retarded. 1980, 15 (1), 8-14.

The purpose of this study was to determine (a) the effect of music and approval as reinforcers for following a command, (b) the effect of a food-pairing procedure on an approval alone condition, an approval plus music condition, and an ignore condition, (c) the durability of newly reinforced conditions, and (d) the strength of the new reinforcers as contingencies for following a second command. The subject, Jane, was a severely retarded, non-ambulatory, non-verbal 15 yr.-old girl living in a residential training center. The treatment was implemented during her 40-minute twice-a-week music therapy sessions.

The experimental design involved applying four experimental conditions to one behavior and then to a new behavior, with each condition consisting of a specific contingency. There were four phases in the study: Probe phase (days 1-5); Conditioning phase (days 6-15); Maintenance phase (days 16-35); and Generalization phase (days 26-35). The study was conducted for 35 days over a 6 month period. The two behaviors that were trained and tested were the commands: "Jane, give me the bead" and "Jane, put the ring in". During the conditioning phase, the "verbal approval" experimental condition, and the "verbal approval plus music listening" condition served as control measures for the third conditions, "verbal approval and music listening paired with food". During the maintenance and generalization phases, an "ignore" condition was instituted as an additional control measure. The music used as an experimental condition was 10 sec. of listening to a cassette tape of 12 music selections including marches, classical music, folk tunes, rock tunes and children's songs. The food contingency was a spoonful of pudding following a correct response.

In the five training trials, the trainer prompted Jane by guiding her hand to get the bead from the container, placing it in the trainer's other hand, and giving the contingency immediately. During the five test trials the trainer did not prompt Jane, but when the proper behavior was completed, gave the contingency and recorded a score of 1 on that trial. The order of presentation of conditions was rotated for each session in all four phases. The procedures used for the conditioning phase were the same as those in the probe phase except the third experimental condition, approval plus music plus food, was added. In the maintenance phase, the food contingency was dropped to see if the veral approval and music listening would maintain as reinforcers. During sessions 26-35, an "ignore" control condition (which consisted of the trainer physically turning away for 10 sec.) was added. During the generalization phase, the new commend "Put the ring in" was trained and tested under the same three conditions concurrently being used in the maintenance phase.

Results showed that interobserver agreement for the two trained observers averaged 99% with a range from 98%-100%. During the probe phase, Jane correctly completed only 81% of the test trials under the approval condition or under the approval plus music condition. In the conditioning phase, there was an almost immediate rise in the level of behavior for the approval, music, and food conditions. During the maintenance phase Jane completed 100% of the approval condition trials and 98% of the music plus approval trials. Ninety percent of the ignore condition trails were completed

correctly. In the generalization phase, the percentage completed for the new behavior was 60% for approval, 100% for approval plus music, and 44% for the ignore condition.

Results show that music and approval can be conditioned as reinforcers by pairing them with food over a period of time, and they also can generalize as reinforcers for new behavior. The conditioning of secondary reinforcers is particularly important with special education students for whom there are limited reinforcers. Secondary reinforcers, such as music are educationally beneficial, reusable, economical, and less satiating than food. The procedure described in this study seems applicable for the classroom because the design provides a system of immediate feedback to the teacher, and is relatively simple.

Art Form: Music
Disability: Profoundly Retarded

Greenwald, Amelia M. The effectiveness of distorted music versus interrupted music to decrease self-stimulatory behaviors in profoundly retarded adolescents. Journal of Music Therapy, 1978, 15 (2), 58-66.

The purpose of this study was to investigate if distorted music was more effective than interrupted music in decreasing the self-stimulatory behaviors of profoundly retarded adolescents. Inappropriate self-stimulatory behaviors included: hand in or against mouth; mouth against wheelchair or clothing; and hand against head or chin. In order to create distorted music the authors randomly recorded bluegrass, pop rock-and-roll, and easy listening instrumentals and distorted the music by: adding white noise; changing speaker balance; turning the tape on and off; 1 to 2 second stops in music; envelope modulations; changing the tape speed; slowing tape; overdriving the pre-amp; and dynamic fluctuations.

The sample included four profoundly retarded adolescents, with IQ's below 20, who were non-verbal, non-ambulatory, and exhibited high levels of self-stimulation. The mean number of years of institutionalization was 11. There is no evidence indicating the random selection of subjects. The six week treatment program was held seven days a week and administered individually for 11 minutes, twice a day. Stopwatches were used to determine the length of time of the target self-stimulatory behaviors. The experimentor ran the tape equipment and recorded the behaviors. Two other observers were present for 24% of the session. The inter-observer reliability was at least 94% for all subjects.

The author utilized a (A_1 A_2 B A_1 A_2 C) changing conditions design. The two baseline conditions, silence and noncontingent music, and the two treatments were randomly presented to each of the subjects. Different taped music was also randomly presented to each subject. During the treatment I phases the adolescents had to exhibit appropriate behavior for three seconds in order to hear music. If the adolescent exhibited any of the target self-stimulatory behaviors then the music was replaced with silence. Treatment II was identical to Treatment I except that distorted music was played instead of silence after an inappropriate behavior.

The results of this study indicate that no significant changes occured due to distorted music or silence. The author suggested that these contingencies may not be appropriate for the profoundly retarded population.

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Art Form: Music
Disability: Mentally Retarded

Holloway, Martha Snead. A comparison of passive and active music reinforcement to increase preacademic and motor skills in severely retarded children and adolescents. Journal of Music Therapy, 1980, 17 (2), 58-69.

The purpose of this study was to evaluate the effectiveness of contingent music listening (passive reinforcement) versus contingent playing of rhythm instruments (active reinforcement) to increase preacademic and motor skills of severely retarded children and adolescents. Subjects were eight severely retarded children and adolescents (sex not indicated) residing in a state institution. Chronological age ranged from 8 years to 18 years with a mean of 10 years. The mean length of institutionalization was 8 years with a range of 3 to 11 years. Five subjects were nonambulatory, and all were nonverbal with additional handicaps including cerebral palsy, spasticity, and hyperactivity. All subjects had normal hearing and were responsive to musical stimuli.

Two behaviors which were initially performed with less than 50% accuracy were targeted for each subject. An example of these are: Subject 1, Behavior 1 was throwing a ball forward, and Behavior 2 was pushing a button on a toy. The two behaviors per subject were treated with two different contingencies, music listening (passive reinforcement) and instrument playing (active reinforcement), applied to each behavior. Music listening consisted of a 10-second song praising the subject for completion of the task; whereas, in instrument playing, the subject received his or her preferred rhythm instrument for 10 seconds following a correct response. To control for order effect, half of the subjects were randomly selected to receive listening first, and the other half received playing first.

Baseline data were taken before and after each treatment condition by measuring each subject's target behaviors (the first one to occur consistently for three sessions was labeled Behavior I, and the other became Behavior 2). Once baseline stabilized, Behavior 1 received treatment until it met the criterion of 25% above baseline for three consecutive sessions. Baseline conditions were reinstated if the criterion was met or if the criterion was not reached within 10 sessions. Behavior 1 remained in baseline until it stabilized. Next, the reinforcement procedure not previously used was applied. Once the criterion was met with the next treatment, or 10 sessions occurred without meeting criterion, baseline conditions were reinstated. Each behavior received 10 trials for a total of 20 trials per session. When a correct response was made, a plus was recorded on the data sheet, with a minus for an incorrect response. Reliability between observors was computed at .93.

Results of a one-way analysis of variance for the three conditions (passive, active, and no reinforcement) indicated a significant difference existed between behavior frequency means. A Newman-Keuls Multiple Range comparison procedure revealed that significant differences occurred between the no-reinforcement condition and both music reinforcement conditions. No significant difference was found between passive and active music reinforcement, nor in the number of sessions needed to meet criterion means. Although passive and active music reinforcements were statistically equally effective, variations occurred with individual subjects and are summarized in the article.

The study suggests that both music listening and instrument playing can be used as reinforcements to increase preacademic and motor skills in the severely retarded, and that one may switch back and forth from passive to active (or visa versa) music reinforcement to enhance learning.

Art Form: Music
Disability: Mentally Retarded

Kester, Buford, & Richmond, Bert O. Music training for severely and profoundly retarded individuals. Athens, Georgia: Georgia University, 1976 (ERIC Document Reproduction Service No. ED 111 128)

This study investigated whether severely retarded individuals could be taught to play musical instruments and whether ability, sex, or trainig procedure significantly influenced their performance.

Four treatment groups were randomly assigned eight male and eight female severely retarded individuals between the ages of 7 to 20. The remaining 32 retarded individuals became the control group. Professional staff members rated 18 females and 18 males as having the skill ability needed to master the music task; of these, 24 subjects were randomly dispersed between the four groups involved in the experiment.

The musical task involved having the children play 17 notes on a xylophone creating the song "Hot Cross Buns". Only keys F, G, and A were used and a .80 performance was necessary to pass the trials. Subgroup one used a xylophone with all white keys and each time the song was played the trainer sang along. Subgroup two had all white keys but the music trainer did not sing. Subgroup three and four used the same procedure except that in the third group the trainer sang while in the fourth group the trainer did not sing. These two groups used color-coded keys on the xylophone. One key was red, one was blue, and one was yellow. All subgroup members took two weekly 10 minute individual training sessions for six months or until the subject reached criteria. The procedure involved having the trainer play the song, then the trainer guided the individual through the song, and then each child was urged to play the song without the trainer's help.

An analysis of the variance of time required to pass the music task indicated a .01 level of significance due to type of training and the ability of the children. The Duncan Multiple Range Test showed no significant difference in the mean months needed for the four subgroups to master the task. The control group children did not master the task. There was no difference in ability due to sex. The group rated as high ability were able to master the task faster than the low ability children.

The author suggests that these results may show that profoundly and severely retarded children can learn simple music tasks without operant conditioning. He also notes that the professional staff seemed to have the skill necessary to determine high ability children in this experiment which is important because of the lack of proper psychometric instruments for testing this group of individuals.

Art Form: Music
Disability: Mentally Retarded

Lienhard, Marta E. Factors relevant to the rhythmic perception of a group of mentally retarded children. Journal of Music Therapy, 1976, 13 (2), 58-65.

The purpose of this study was to determine the relationship between measured rhythmic perception and chronological age, social age, social quotient, intelligence, and sex in a group of institutionalized retarded children. The subjects were 22 female and 32 male mentally retarded children at the Belle Chasse State School, Belle Chasse, Louisiana. Chronological age (CA) ranged from 126 to 282 months; social age, as determined by Vineland Social Maturity Scale (Doll, 1965), ranged from 3 yr. 4 mo. to 17 yr. 6 mo., and social quotients using the same test ranged from 28 to 93. IQ's, as measured by Stanford-Binet Intelligence Test, Form LM (Terman & Merrill, n.d.), Slosson Intelligence Test (Slosson, 1963), Wechsler Intelligence Scale of Children (Wechsler, 1974) and Peabody Picture Vocabulary Test (Dunn, 1965) ranged from 30 to 74. All children were verbal and showed no hearing difficulty for ordinary conversation (60-75 db).

Rhythmic perception was measured with a test devised by and administered by, the author. The test consisted of 20 pairs of various rhythmic examples, each example being one measure in length with a time signature of 4/4, played on a tape recorder. Pure tones of 500 cycles per second were used in various combinations of two beats, single beats, half beats, and quarter beats. Each subject heard the same 20 pairs of rhythmic examples, and had to indicate verbally whether they were the same or different.

Using only correct answers, and discarding wrong answers and items not answered, the data were recorded on IBM cards and run through a CDC-3300 Computer. Variables recorded were rhythmic perception, CA, IQ, social age, social quotient, and sex. Results showed that of the five independent variables, IQ, chronological age, and sex (in descending order of importance) were the three most influential variables in determining rhythmic perception scores, each increasing the square of the multiple correlation coefficient above a 1% increase and together accounting for 15.64% of the total explained percentage variation in measured rhythmic perception.

Results suggest that older students and students with a higher IQ would be more successful with rhythmic activities than would those of lower IQ's and CA's. Analyses of the data failed to provide information as to which sex tended to have better rhythmic perception. Further studies should investigate this problem as well as whether rhythmic activities may prove to be therapeutic for persons with low IQ's and CA's. As social age and social quotient were the only variables included in the study which did not show a 1% increase in the square of the multiple correlation coefficient, future studies should concentrate on the relationship between rhythmic perception and specific areas represented in the Vineland. Other studies might also be conducted to compare normal and mentally retarded subjects in their perception of rhythms.

Art Form: Music
Disability: Severely and
Profoundly Retarded

Metzler, Roberta K. The use of music as a reinforcer to increase imitative behavior in severely and profoundly retarded female residents. Journal of Music Therapy, 1974, 11 (2), 97-110.

The purpose of this investigation was to examine the effects of music as a reinforcer of imitative behavior in severely and profoundly retarded females. The author hypothesized that music used as a reinforcer would increase the time involved in imitation of the experimenter during a work task and that there would be an increase in the amount of work completed. The author also hypothesized that when music was utilized as a differential reinforcer for appropriate actions, the females would be able to increase discriminatory behavior between objects different in shape and color.

New female residents transferred from an overpopulated, loosely structured residential setting to a high structured residential treatment center formed the sample for this experiment. The first thirty arrivals were randomly assigned to three equivalent groups. All of the women ranged in age from 16 to 55 years with IQ's below 35. All of them were ambulatory and all could see and hear. The women had been determined to be severely and profoundly retarded based on a behavior rating form and team conferences.

Each female participated in three weekly, individual testing periods. The 10-minute periods eventually totaled 18 sessions. Group K and Group L were control groups. Group K was not presented with music. Group L listened to music during the entire session. Group M, the experimental group, initially was presented with music contingent on general imitative behaviors and then later was presented with music based on differential reinforcement of a specific response. The task involved having the woman place beads in one receptacle and blocks in a different receptacle, one at a time. During experimental Condition I, the Group M women received five seconds of marching music for each bead or block dropped in a receptacle. The experimenter sat at the opposite end of the table from the subject and sorted blocks and beads into their appropriate container in order to model the correct responses for the residents. He also demonstrated the appropriate procedure two times before each session by guiding the subjects hand to the correct container. The music was controlled by a foot pedal attached to a tape recorder and would stop after five seconds unless depressed again by the experimenter. During Condition II Group M females received music reinforcement only if the beads and blocks were correctly sorted into their appropriate containers. All three groups were presented with the same demonstration and task with the only difference being the use of music.

The amount of time spent in imitative behavior was recorded by an electronic continuous timer and an electric impulse counter monitored the number of blocks and beads. An F test for analysis of variance and a trend analysis was used to examine the data and test the significance of the hypothesis. The data indicated that there was no significant difference between the group in means of any of the 18 sessions. No significant difference was discovered in measurements among groups, trials, and interactions between groups and trials either. The author concluded that music did not reinforce imitative behavior in the females of this study. The author suggested that future studies select similar subjects based on baseline information. The author also noted that shaping procedures may be beneficial in other studies of this nature.

Art Form: Music
Disability: Mentally Retarded

Ritschl, Carlo; Mongrella, John, & Presbie, Robert A. Group time-out from rock and roll music and out-of-seat behavior of handicapped children while riding a school bus. Psychological Reports, 1972, 31(3), 967-973.

Behavior problems similar to those in the classroom are found riding a school bus--out-of-seat, talking out, and hitting--but the disturbances are life threatening in a moving vehicle. Possibly these problems are more common in special education bus-riding children when the usual verbal reprimands given by the bus driver or paid supervisors tend to reinforce the inappropriate behaviors. This study assessed the effects of a group control procedure, time-out from rock and roll music, on the out-of-seat behavior of a school bus of 25 educable mentally retarded (EMR) children ages 7 to 15 years. The 25 subjects, from three EMR classes in the Dover (New Jersey) Public Schools, showed the following age distribution: Primary I (7 to 9 years), 9 children; Primary II (10 to 12 years), 11 children; and Intermediate (13 to 15 years), 5 students.

During the afternoon bus ride, the children were seated in their assigned seats, and a portable cassette player was used for playing the music. Baseline I ran for 11 days and represented the normal behavior of the children on the bus with a teacher supervisor. To determine the effects of ignoring out-of-seat behavior, the bus driver and teacher ignored it for a period of 5 days. Before Group Time-out I began, there was a classroom demonstration to each group of how the procedure would work. The music was to be played when all children were sitting and to be turned off for 5 seconds if one or more children were out of their seats and did not sit down within a time limit of one second when the teacher said, "Sit down." If a child got up when the music was off, then five seconds more was added to the time out. These conditions were maintained for 33 days during the afternoon bus ride only. To assess the effects of the contingency, there was a return to baseline conditions for five days, then a return to time-out procedures for four days, then a return to baseline for four days, then time-out procedures for 6 days, and a final baseline evaluation for the last two days of the school year. Observer reliability checks were done by having both teachers ride the bus together and independently count the behaviors; they were shown to be 90.3% reliable.

Results were computed for both the morning and afternoon rides although the contingency was used only in the afternoon as this was the only time both teachers could be present to obtain reliability checks. Afternoon out-of-seat behaviors averaged 5.4 during Baseline I (normal verbal reprimand procedures), and rose to an average of 13.8 during the "ignore" period. When Group Time-out I was introduced, out-of-seat behaviors dropped to an average of 4.0. The next baseline showed an increase to 7.4, followed by a drop to 1.5 during the following contingency period. In the next baseline, out-of-seat behaviors increased to 4.5; Group Time-out decreased such behavior to an average of 2.3 in the following time period. During the last baseline--the last two days of school--there was an average of 3 out-of-seats per afternoon bus ride.

As the results show, the group time-out procedure was quite effective; likely the same simple, inexpensive procedure could be used by others. Possibly, in some situations, the bus driver could administer the program by turning off a bus radio when out-of-seat behavior was observed thus eliminating the cost of a bus supervisor.

Art Form: Music (Rhythm Training)
Disability: Mentally Retarded

Ross, Dorothea; Ross, Shelia & Kuchenbecker, Shari. Rhythm training for educable mentally retarded. Mental Retardation, 1973, 11(6), 20-23.

Since it is important for the educable mentally retarded (EMR) child to have a sense of rhythm to do well on fine and gross motor repetitive tasks, in social activities such as sports and dance, and in vocational tasks such as typing and assembly line work, the authors undertook this study to teach rhythm skills. The purpose of the study was to test the efficacy of a 4-week rhythm training program for young EMR children. It was hypothesized that the experimental group, which had small group rhythm bands, games, stories, and movement activities, would show significant gains over the control group which had a traditional primary music program with other unrelated activities to control for the Hawthorne effect.

The subjects were 18 girls and 10 boys from four primary EMR classes (socioeconomic, racial, and demographic backgrounds not given) randomly assigned to the experimental (n=14) or the control group (n=14). Descriptive statistics on the two groups showed they did not differ in chronological age, mental age, IQ, sex, or in scores on a music pretest. The music test, previously developed and tested by one of the authors (S. Ross, 1969), consisted of 23 items grouped into eight categories of rhythm responses, each demonstrated by the examiner before the child got one practice and one test turn to perform the task. Research assistants who did the pre- and posttesting established a scoring reliability of 94% prior to each doing half the pretesting and half the posttesting. The treatment program for the experimental group consisted of 20 lessons, 25 minutes each, over a 4-week period. Activities chosen to improve sense of rhythm included: taped music and rhythms of all types, small group games, stories, percussion band sessions, instruments and team competition. Instructors were undergraduate students in psychology chosen for their interest in working with retarded children, not their musical ability. Reinforcement procedures, consisting of a card with 20 squares which when filled with stars was redeemable for a small toy, were used as 12 of the children initially found even the simplest rhythm responses difficult. The control group got the same reinforcement system in an unrelated activity.

Results supported the hypothesis that rhythm training would significantly improve the rhythm responses of the experimental group in the posttest. An analysis of covariance showed that the effect of training was highly significant ($p < .0005$). The pretest, posttest, and adjusted posttest means for the experimental group were 9.50, 17.50, and 16.63, respectively; whereas for the control group they were 7.43, 9.36, and 10.23.

The non-specific training activities used in this study, although not well controlled as variables so the experiment could be replicated, have the advantages of not requiring a musician to direct, of being applicable to everyday activities, and of generalizing to other settings. Interestingly, each of the rhythm tasks was task analyzed and taught in subskill tasks allowing continuous reinforcement; this, as well as the rhythmic training, would account for the success with mentally retarded children and warrants further study.

Art Form: Music
Disability: Mentally Retarded

Stainback, Susan B., Stainback, William C. & Hallahan, Daniel P. Effect of background music on learning. Exceptional Children, 1973, 40 (2), 109-110.

The purpose of this investigation was to determine whether soothing background music affected educable retarded students on task relevant behavior and task irrelevant behavior. The independent variables were identified as: calming background music; distracters during a task; and the subject's age levels.

The study included a modified, random sample of 64 students, 120 to 173 months old with IQ's between 50 and 87. These students were selected from all children in the appropriate age and IQ range at the Petersburg Training School in Petersburg, Virginia during the 1971-72 school year. The stratification was done on the basis of age level (primary was 120 to 149 months and intermediate was 150 to 173 months) with 32 children selected for each strata. The children were randomly assigned to one of eight groups. The four groups from each strata included eight children a piece.

The relevant task material included six white cards with a picture of a household object on the top half and an animal on the bottom half of the card. The irrelevant task material included six cards depicting the same household objects and a large white card with only the animals pictures along the bottom half of the card. The author does not state how the tasks were performed.

The first group, the no music and no distractor group worked the task without auditory interference. The second group, the distraction only group worked the task while taped hall noise was played. The third group, the music only group, performed the tasks while a tape of Bach's "Air for the G String" was played. The final group, the music and distractor group, performed the tasks while both tapes were played. A three way analysis of variance divided into the following factors was used to analyze the data: treatments - calming music and absence of music; auditory stimulation - distractor and absence of the distraction; and age level - primary and intermediate. A significance set at the .026 level in favor of the music group was found between the music group and the non-music group on the task relevant learning scores. There were no other relevant score differences nor was there a significant interaction between the variables as determined by the data. The authors note that music may help educable retarded students to attend to relevant stimuli. They also suggest that these children are also better able to process more information when music is played since relevant learning increased without decreasing irrelevant learning.

Art Form: Music
Disability: Mentally Retarded

Wingert, M. Lucille. Effects of a music enrichment program in the education of the mentally retarded. Journal of Music Therapy, 1972, 9(1), 13-22.

Although the hypotheses of the author were not delineated, the purpose of the study was to determine the effects of a music-enrichment program upon the measured intelligence, basic knowledge, communicative abilities, and social behaviors of retarded children. The subjects were 10 mentally handicapped children in a special school for retarded children in Warren County, Tennessee; random selection of subjects was not indicated. A control group of 10 children was formed matching IQ, physical handicaps, emotional handicaps, age, sex, and achievement levels as closely as possible, within the same school, to the experimental group. The experimental group had a mean mental age (MA) of 7 yr. 1 mo., and the control group had a mean MA of 7 yr. 8 mo. The mean chronological age (CA) of the experimental group was 15 yr., while that of the control group was 15 yr. 4 mo. The age range in the experimental group was 11 yr. to 18 yr. 8 mo., and that in the control group was 12 yr. 2 mo. to 20 yr. 5 mo. (No age means were given for either group.) The experimental group was comprised of six boys and five girls, while the control group included five boys and five girls. The racial composition of both groups was the same, nine whites and one black in each. In reality, nearly all subjects in the experimental group were multiply handicapped as individual subjects were described as having "spastic paraplegia", "severe visual impairment", "emotional disturbances", "hearing deficiency", and/or "speech problems". The multiple handicaps of the control group were not described.

The treatment involved the experimental group in musical activities for 40 minutes, twice weekly, for 18 weeks. The control group had some musical participation in their regular classroom but did not receive the additional music treatment. The musical activities included group singing including activities from the book Music Activities for Retarded Children (Ginglend & Stiles, 1966); playing of instruments including bells, rhythm instruments, portable organs, and xylophones; listening activities including recordings of "Peter and the Wolf", "The Nutcracker", "Swan Lake", "The Sound of Music", and "Music of the Carousel"; and dramatic and musical play including hand puppets and circle games. In all activities, personal choices and individual participation were encouraged and praised. Throughout the study, negative attitudes and behavior were minimal and an attitude of eager participation was prevalent.

Pretest and posttest administration of the Peabody Picture Vocabulary Test (PPVT)(Dunn, 1959) measured "intelligence", and the Trainable Mentally Retarded Performance Profile (TMR Profile)(Di Nola, 1968) was used to measure basic knowledge, communication, and social behavior of each child. Although the PPVT was used to determine IQ's because of its ease of administration, it does not have established reliability and validity in determining intelligence of mentally retarded, multiply handicapped children. Also the TMR Profile does not have established validity but was used because of its content.

In basic knowledge its tests number, time, and social studies concepts, familiarity with colors, directions, the alphabet, etc. In the area of communiation, it assesses language and listening skills, group singing and dramatic play. In social behavior, the TMR Profile appraises aspects of self-control, group participation, and desirable personality traits.

Results showed that the mean pretest and posttest intelligence scores on the PPVT for the experimental group were 54.4 and 60.1 respectively, showing a mean difference of 5.6 between pre- and posttest. For the control group, the scores were 60.3 and 58.7, respectively, yielding a mean difference of -1.6. However, inherent as a factor in interpretation was the 7.2 standard error of measure for the PPVT. Possibly, the TMR Profile scores were distorted as the test has a provision of x scores which indicate the inability of evaluator to give a numerical rating. There were fewer x scores in the posttest than the pretest, which may have contributed toward higher scores in the posttests. The t test for correlated data was used to test the significance of the mean differences in the pretest and posttest measure of both groups in each ara. The modified t for uncorrelated data, based upon the pooled variances of two samples, was used to determine the significance of difference in the mean change between the experimental and control groups in each area. The 5.6 increase in the IQ scores of the experimental group was statistically significant at the .05 level. The mean change difference of 7.2 between the experimental and control groups was also significant at that level. In the areas measured by the TMR Performance Profile, there was a significant increase in both groups between pre- and posttest; however, the influencing factors must be taken into consideration. In the same areas, there was no significant difference between mean changes of the experimental and control groups.

As the study was not controlled for extraneous influences such as the social and psychological factors of experimental treatment, results are likely tainted by the "Hawthorne effect", as well as the weaknesses of the measuring instruments.

Art Form: Music
Disability: Mentally Retarded

Wasserman, Norma; Plutchik, Robert; Deutsch, Robert; & Taketomo, Yasuhiko. A music therapy evaluation scale and its clinical application to mentally retarded adult patients. Journal of Music Therapy, 1973, 10(2), 64-77.

In this study, the authors developed a three part music therapy evaluation scale to assess musical aptitudes and social behavior in institutuionalized mentally retarded adult patients. Separate scales were developed for rhythm group, singing group, and vocal dynamics group, but several questions were common to the three scales (a copy of the Music Therapy Evaluation Scale is included in the study). Musical aptitude was defined as the patient's ability to use musical instruments, to produce spoken and sung sounds, and to discriminate different vocal and instrumental pitches, dynamics, rhythms, and tempos. Social behavior was defined as the patient's willingness to participate, his attitudes toward the group leader, and the acceptance of responsibility for leading some musical activities. During the rhythm group, each client was offered a variety of simple rhythm instruments; group leadership moved from the therapist to individual clients. In the singing group, the therapist played the piano and the use of the voice for sung sounds was emphasized. In the vocal dynamics group, no instruments were used and all sounds were produced with voice or body (e.g. clapping, foot-stomping).

Sixteen patients, ranging from 16 to 42 years of age, were used from the "Cognitive Development Service" unit at Bronx State Hosiptal, Bronx, New York. The authors do not indicate whether the clients were randomly selected or were the total population of the unit at the time of the study. The group included four women and twelve men; five had limited verbal abilities, and all were essentially nonverbal. Three patients were Puerto Rican, four were black, and nine were white. All patients had a history of superimposed psychotic phases; five were unpredictably violent. The degree of retardation ranged from moderate to profound as determined by the Stanford-Binet (1960), or Cattell Infant Intelligence Scale (1968). The mental ages ranged from 1.5 years to 6.9 years.

The music therapy treatment program described in this study was one of several treatment programs introduced for the patients in this unit. Music therapy involved three 30-minute sessions per week for a one-month duration with the music sessions always given in the following sequences: rhythm group, singing group, half-hour break, vocal dynamics. The music therapist conducted the sessions with one of two independent raters present to complete the rating scales for five patients. Different groups of five patients were rated during different sessions with each patient being rated at least once a week. Evaluations were made for each patient in each musical group at the beginning of therapy and at the conclusion of therapy one month later. These overall scores were broken down into two parts: the first represented social behavior during music therapy, and the second represented musical aptitude.

The inter-rater reliability in evaluating musical aptitude and social behavior was .93 for rhythm group, .95 for singing group, and .96 for vocal dynamics using the Pearson product-moment correlations. Findings showed that there was no change in the musical aptitudes and

social behavior of the patients either as a result of music or other factors. The t-test for correlated data showed no significant changes (rhythm group, t=1; singing group, t=4; vocal group, t=0). However, correlations between IQ scores and rating scale scores for groups were -.71 for rhythm, -.86 for singing, and -.91 for vocal dynamics using the Pearson product-moment correlation. (Correlations are negative because low scores on the musical aptitude scales indicate better functioning.) Product-moment correlations between component scores of social behavior and musical aptitude for each overall score were also high (rhythm group, .80; singing group, .85; vocal group, .85). This suggests, like the previous correlations, that social behavior and musical skills are both correlated with intelligence.

Although there were no significant changes as measured by the evaluation scales, a number of patients showed definite improvement in their social behavior in the music therapy setting, including the cessation of self-stimulating behavior in one client and the elimination of wetting in others during therapy. This area, plus the broad area of the correlation between IQ and musical skills, deserve further investigation. It is interesting to find that the correlation between IQ and musical skills for the population used in this study was so high when it has been reported as a low positive correlation within a normal range of intelligence. Possibly musical skills require some minimal level of cognitive functioning. Consistent with other researchers' findings, the authors noted that the rhythm skill did not correlate as closely with IQ as other skills, suggesting that rhythm is the most primitive of the three scales.

Art Form: Music
Disability: Developmentally Disabled

Rider, Mark S. Musical perception in the assessment of cognitive development. Dallas, Texas: Southern Methodist University, 1978. (ERIC Document Reproduction Service No. ED 155 858)

The two studies presented in this document were designed to create tasks, based on musical conservation, which could be used to assess the cognitive development of developmentally disabled children. The author implied that musical conservation tasks would be helpful in determining the cognitive readiness level needed for note-reading, improvisation, and composition, as well as logico-mathematical operation. The tasks were produced especially for use with the visually impaired. The authors noted that a curriculum utilizing these tasks and the concepts and materials of Piaget could be used to train normal and developmentally disabled children in cognitive development.

In the first experiment 40 developmentally disabled children, most of whom were cerebral palsied, with a mean chronological age of 9.5 and a mean mental age of 8.1 were given four tasks. The tasks administered included two of Piaget's conservation tasks; conservation of area (CA) and conservation of continuous volume (CCV), and two musical conservation tasks, conservation of rhythm (CR) and conservation of tempo (CT). The ability to conserve was defined as the capacity of the children to recognize a concept. The author did not state whether the subjects were randomly chosen.

The CA tasks involved the children recognizing that an equal number of 1 inch squares covered the same area regardless of arrangement. The CCV tasks assessed the children's ability to realize that the amount of water in a container did not change when the water was transferred to a receptacle of a different size and shape.

The CR task required the children to understand that when a consistant drumbeat was concomitantly joined by two successively different melodic tempos of "Row, Row, Row Your Boat", the drumbeat would still retain the same speed. In the CT task children were required to understand that rhymically pulsed resonator bells and drumbeats retained the same speed whether they were syncopated or played at the same time.

A scologram analysis determined that the four tasks could be scaled with a reproducibility coefficient of .98 and a scalability coefficient of .94. The tasks were ranked developmentally in this order: CR, CA, CCV, CT. CR and CT acquired ages were determined by examining the relative strength among the four tasks in comparison to the established ages of CA and CCV. Phi correlations established a .01 level of significance between any two tasks.

In the second experiment, 32 normal public school children, grades two through five were administered four music conservation tasks from the Musical Perception Assessment of Cognitive Development (M-PACD) (Rider, 1978) three Piagetian conservation tasks, and the tempo subtest of the Musical Aptitude Profile (MAP)(Gordon, 1965). The music tasks included conservation of rhythm (CR), conservation of tempo (CT), conversation of auditory number (CN), and conservation of duration (CD). The Piagetian tasks consisted of conservation of mass (CM), conservation of weight (CW) and conservation of volume (CV). The author did not mention whether random selection was used.

The CR and CT tasks were the same as in the first experiment with the exception that "London Bridge is Falling Down" was the song used in this experiment. The CN task required the children to recognize that a melody played at two different tempos still had the same number of notes in each tempo. CD required the children to understand that when a bell melody and a drumbeat started and stopped at the same time, the time that either was played was equal regardless of whether they were played at the same tempo.

The Piagetian tasks used two balls of plasticine, one of which was deformed, to see if the children realized that, despite the deformity, the balls were equal in weight, mass, and volume. The CV task used two same-size containers in which the two balls were submerged and the water displacement was compared.

The tempo subtest of the Musical Aptitude Profile was administered to the 32 children to assess whether the musical cognitive tasks depended upon musical aptitude. The test consists of playing a musical phrase two times and seeing whether the subject can determine if the tune was played at the same or a different tempo.

The author used the Grittman Scalogram analysis to scale the musical tasks and the Piagetian tasks. Musical perception of cognitive development tasks were scaled in this order: CR, CN, CT, and CT with a reliability coefficient of .95. The Piagetian tasks were scaled in this order: CM, CW, and CV with a reliability of .98. The scalability level established that the musical cognitive tasks of CR, CN, and CT could be substituted respectively for the Piagetian tasks of CM, CW, and CV. A Kendall partial correlational analysis between the M-PACD and the Piagetian tasks established a .63 correlation. The author also determined that the correlation of .36 between the M-PACD and the tempo subtest and the .30 correlation between the Piagetian tasks and the tempo subtest suggest that these tasks are independent of musical aptitude.

The author concluded that the M-PACD has been established as a tool for assessing cognitive development and may be used to compliment the Piagetian tasks test. The M-PACD will be especially helpful in assessing the cognitive development of the visually impaired.

Art Form: Music
Disability: Autism

Applebaum, Edward., Egel, Andrew L., Loegel, Robert L., & Imhoff, Barbara. Measuring musical abilities of autistic children. Journal of Autism and Developmental Disorders, 1979, 9 (3), 279-285.

The purpose of this study was to determine if autistic children would differ from normal children (n=3) in one specific aspect of musical ability, the ability to imitate individual tones and series of tones. The six subjects (all male) ranged in chronological age from 14 yr. 3 mo. to 18 yr. In full scale IQ (Wechsler Intelligence Scale for Children-Revised), the autistic children ranged from 61 to 80, and in language grade equivalents (California Achievement Test) from 2.5 to 4.5. The autistic subjects were chosen on the basis (1) of their having been diagnosed as autistic in accordance with the APA Diagnostic and Statistical Manual II for Psychotic Reaction of Childhood - Autistic Reaction, and (2) of anecdotal reports from parents and teachers of the presence of musical abilities. None of the autistic children had ever received any formal music training; whereas, all the normal children had music training and were reported high in musical skills. The normal children were age matched to their autistic counterparts.

Direct imitation of a musical stimulus was chosen over a paper-and pencil test not only for its relevance to the autistic subject population but also because it is considered by musicians to be critical and a necessary component of musical ability. The procedure that was developed for this study by the authors was based largely on the work E. Gordon (Musical Aptitute Profile, Houghton Mifflin, 1965). Two tape recorders were set up 15 feet apart with one for the test tape and one for the subject's vocal reponse. The test consisted of 20 levels of increasing complexity, beginning with simple pitches and ending with sets of four tones in an atonal configuration. At each level an example and two variations were given, variations being made in timbre, duration, pitch order, or changes/additions of pitch. Each of the three examples on a level was given in a different mode: voice, singing the syllable "la"; piano and synthesizer. The order in which modes were used at each level was random. Responses were rated by two independent musicians on a 1-5 continum, with an average agreement across all sessions of 80%.

Overall, the results showed that the autistic children performed as well as or better than the normal children on 62% of the trails. However, no statistical evidence was presented in this study and the small sample makes conclusions difficult to draw. Further research needs to be done to investigate this phenomenon on a larger number of autistic children.

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Art Form: Music
Disability: Emotionally Disturbed

Giacobbs, George A. & Graham, Richard M. The response of agressive emotionally disturbed and normal boys to selected musical stimuli. Journal of Music Therapy, 1978, 15 (3), 118-135.

The purpose of this study was to determine if difference musical preferences exist between children considered emotionally disturbed and those considered to be normal. All subjects were enrolled in public school classes, were American-born, Caucasian, male 9 to 11 years of age, IQ's between 85 and 115, no gross physical or sensory handicaps, and hearing within normal limits. The normal boys had not repeated any grade, had no major emotional difficulties, and had a low score on the Behavior Problem Checklist as rated by their teacher. The agressive emotionally disturbed boys had been previously diagnosed by a psychologist or psychiatrist and had a high score on the Behavior Problem Checklist as rated by their teacher.

Phase I of the study involved constructing a Music Preference Test (MPT), an audio tape of 51 musical selections based on the IPAT Music Preference Test (1953). A wide variety of orchestral musical selections, approximately 39 sec. in length each, was chosen and recorded on audio tape separated by 12 sec. periods of silence to allow for responses. On the basis of the responses of 11 males meeting the above criteria for age, sex, and race it was determined that: (a) the scales (happy-sad, like-dislike, good-bad) on the response form were highly correlated, (b) the response on a scale did not tend to influence a response on the following scale, and (c) the selected musical stimuli was perceived by them as a broad range of musical stimuli.

During Phase II, the musical selections were presented to 20 normal and 20 aggressive emotionally disturbed boys that met all of the above criteria to be admitted to their respective group. By circling the appropriate number on the 1-5 scale continuum, each child was to indicate whether the music was good or bad. The responses were scored on these three scales and a fourth dimension computed by summing the three dimension scales; thus, there were four scores for each of the 51 musical selections, or 204 responses per subject.

An analysis of variance was performed for each of the three sets of scores. On the happy-sad scale, the interraction between group and musical stimulus was statistically significant ($p < .005$). On the like-dislike scale, only the musical stimulus effect was statistically significant ($p < .0005$), with no significant difference between the normal and emotionally disturbed groups. On the good-bad scale, the interaction between group and musical stimulus was not statistically significant. Results of the analysis of the 204 responses, using t-tests for differences between two independent means, revealed that only 6 of the 204 variables were significantly different. On the happy-sad scale, seven musical stimuli differed at the .05 level of significance, with the majority indicating that the normal children perceived the musical stimuli as sadder.

Although the study supports the following conclusions, they should be limited to groups and procedures like those used. As a group, normal and agressive emotionally disturbed children perceive and evaluate music in a similar manner. On a small number of musical items, there were differences with the normal group perceiving the selections as closer to the concept of "sad", "liked" and "good" than perceived by the emotionally disturbed group. The variability of responses was greater, as a group, within the agressive emotionally disturbed group. Future studies should investigate variables such as sex, age, race, culture, and behavior in music preference.

Art Form: Music
Disability: Emotionally Disturbed

Grossman, Susan. An investigation of Crocker's music projective technique for emotionally disturbed children. Journal of Music Therapy, 1978, 15 (4), 179-184.

This study further investigated a projective technique introduced by D.B. Crocker in 1955 whereby emotionally disturbed children told stories to different musical stimuli. For the technique to be useful, it is necessary the stories be autobiographical. Therefore, the following hypotheses were investigated: Professional personnel would be able to correctly match stories to the subjects who told them; and, Professional personnel would be able to correctly identify the musical composition which served as a stimulus for each story. Subjects were three girls and three boys ranging, 6 years to 12 years in age, living at the Methodist Home Hospital in New Orleans, Louisiana. All were diagnosed as emotionally disturbed, and classified as abused.

The author composed two 16-measure songs for this study, one in a major mode in fast tempo (Song A), and one in a minor mode in slow tempo (Song B). The songs were presented to the subjects on a piano and the responses were recorded on a tape recorder. During the music therapy sessions previous to the study, the subjects (plus six additional children) employed the round robin storytelling technique so they would be accustomed to relating stories. The author's musical compositions were then introduced and the children were asked to tell stories to both songs. The stories were taped, transcribed, and given to four judges: the hospital's supervising director, two staff members and the music therapist. Out of a total of 96 stories, 24 were selected because of autobiographic content for presentation to the judges. Judges were told to match each story to the child who told it, and to the musical composition which served as a stimulus.

Data were analyzed on the basis of correct and incorrect responses made by the judges in matching the songs and stories to the subjects. The judges were correct 84 times on the songs, and 83 times on the stories, out of a total of 96 matches made (24 stories x four judges). The results also show inter-judge agreement on songs and stories was significant beyond the .001 level.

Although the results of this study support the Crocker conclusions, additional studies need to be done to verify projective techniques with more closely defined special education populations.

Art Form: Music
Disability: Emotionally Disturbed

Hanser, Suzanne B. Group-contigent music listening with emotionally disturbed boys. Journal of Music Therapy, 1974, 11 (4), 220-225.

The purpose of this study was to investigate the effect of music listening on the inappropriate classroom behavior of emotionally disturbed boys when the music listening was contingent upon the appropriate social behavior of the group. Inappropriate verbal behavior was defined as talking out without raising one's hand. Inappropriate motor behavior was defined as hitting, creating non-verbal noise, or out-of-seat without prior teacher permission.

The sample included three elementary age boys who attended a school for emotionally disturbed children. The boys exhibited a high level of disruptive behaviors such as crying, destructive behavior; tantrums, and hyperactivity. There is no statement concerning the sample selection techniques of the author. The boys were asked to listen silently or hum quietly along with the music, or work on school assignments at their seats during 28, 15-minute sessions. Inappropriate behaviors, verbal and motor, were recorded during all sessions in 30 second intervals. The author reported an inter-observer reliability of 100% but did not indicate the number of observers. The boys chose their favorite musical selections which were randomly recorded on a cassette tape and provided the music for this experiment.

During the first seven days of this experiment music was played on a non-contingent basis and baseline data was recorded. During the next seven-day phase the boys were told that they could only listen to music when all of them were following the rules for appropriate verbal behavior. The third phase involved musical group contingencies based on appropriate motor behaviors. This phase also lasted for seven days. Both motor and verbal group contingencies were implemented during the final seven-day phase. During the contingent music phases, after the music was stopped because of a rule infraction by one of the boys, all of the boys had to obey the rules for 15 seconds before the music was again played.

The mean percent level of inappropriate verbal behavior during the baseline phase was 82% while the mean percent level of inappropriate motor behavior was 90%. The mean percent of inappropriate verbal behavior decreased to 14% during the verbal contingency phase, however, inappropriate motor behavior was at 82%. The motor contingency phase lowered inappropriate motor behavior to 12% but inappropriate verbal behavior rose to a mean of 75%. During phase four, inappropriate verbal behavior was at a 7% level while inappropriate motor behavior was only 13%.

The author concludes that contingent music procedures can effectively decrease the frequency of inappropriate verbal and motor behaviors. She suggested that future investigations should examine and isolate variables such as group pressure so that the reasons for group contingency success may be further evaluated.

Art Form: Music
Disability: Hyperactivity

Reid, Dennis H., Hill, Bonnie K., Rawgers, Robert J., & Montegar, Carol A. The use of contingent music in teaching social skills to a nonverbal, hyperactive boy. Journal of Music Therapy, 1975, 12(1), 2-18.

The purpose of this study was to investigate whether music could aid in teaching social skills to a hyperactive boy. Three experiments were conducted to determine if contingent music would increase appropriate walking skills and appropriate car riding, and if a remote control device was effective in presenting music reinforcement quickly.

The boy was 8 years, 10 months at the beginning of these experiments. The authors described him as nonverbal, extremely hyperactive, and appearing retarded. Other characteristics of the boy included social isolation, neurological impairment, and bizarre behaviors such as self-injurious behaviors and a preoccupation with spinning objects.

In the first experiment contingent music was used in an attempt to increase the boy's appropriate walking skills. A multiple baseline method was used in this study which utilized different contingencies across time, settings, and clinicians. Three clinicians helped the boy walk appropriatly from one class situation to another class situation in a different area of the treatment clinic. Appropriate walking was defined as walking approximately three feet from the clinician's side and inappropriate walking included running, self-initiated stopping, restraint, and being further than three feet away from the clinician. The walking areas ranged from 60 to 90 feet. Observers stationed in the hallways recorded walking behaviors at five second intervals.

Baseline data was recorded during hallway walks with the boy. The clinicians asked the boy to walk with him and awarded verbal praise for appropriate walking. If the boy exhibited inappropriate walking the clinician said "no" and then led him to the closest hallway observation point. During the second phase the boy was allowed to listen to his favorite cassette tape while he was walking appropriately. The clinician carried the recorder by a shoulder strap. If the boy walked inappropriately the clinican turned the cassette player off, said "no" and led him to the nearest observation point. The boy also wore a toy watch during this phase to aid him in discrimination. The third phase was identical except that the watch was not worn. A fading music phase followed the music only phase. In this phase the volume of music was gradually diminished until during the last walk it could not be heard. The toy watch was worn in this phase. During the experiment several sessions were held outside to determine the treatment's generalization effects. Follow-ups were conducted two weeks and eleven weeks after the finish of the treatment.

Twenty-seven reliability checks were conducted by two independent observers. On four of the checks reliability fluctuated from .83 to .90. The remaining checks all had above .90 reliability. The 11 baseline sessions with the three different clinicians showed average appropriate walking to be 55%, 47%, and 48% of the time, respectively. The contingent music and watch phase

increased appropriate walking to 96% with clinician A. At the same time appropriate walking with clinician B rose to 77% and appropriate walking with clinician C rose to 74% while still under baseline conditions. The appropriate walking while with clinician B under the contingent music and watch conditions increased the boy's performance to 94% correct walking. A return to baseline conditions dropped appropriately while walking with clinician B to 75%. The music only phase resulted in an average of 87% appropriate walking with clinician B. A final contingent music and watch phase with clinician B resulted in a mean of 99% appropriate walking over six sessions. Four generalization trials held during the baseline showed a mean of 31% appropriate walking outside the clinic. By the end of the investigation generalization trials showed an increase to 70% correct walking. The two week follow-up revealed 72% appropriate walking. The 11 week follow-up showed 100% appropriate walking outside of the clinic and inside the building.

The authors indicated that the contingent music increased appropriate walking behavior in the boy. They also noted that the toy watch aided the boy as a discriminative stimulus. They also stated that the contingent music programs effects generalized to outside the building at a somewhat lower rate.

In the second study a reversal experimental design was used in an attempt to increase appropriate car riding behavior. Rocking, kicking, bouncing, lying down, climbing, and standing up were determined to be inappropriate car riding behaviors while appropriate car riding behavior was defined as sitting with both buttocks touching the car seat. No gross motor behavior occurred during appropriate riding. Data was recorded at 30 second intervals during trips within the same county.

During the first baseline the boy was allowed to listen to the local FM station while riding to school. The driver offered verbal approval for appropriate sitting and directed the boy to sit appropriately if gross motor movement occurred. During the second phase the boy was told he must sit still if he wished to listen to the radio. The music was turned off if the boy began to sit inappropriately. The third phase was a return to baseline and the fourth phase was a return to the contingent music conditions. The fifth phase was identical to the fourth phase except the boy also received 30 Mg of Ritalin and 15 Mg of Mellaril daily. During the sixth phase the boy did not receive the Ritalin and Mellaril. The seventh phase involved a return to the contingent music, Ritalin, and Mellaril conditions.

Mean reliability between an observer and the driver was .99 over 11 checks. The mean baseline percentage of appropriate car riding was 79%. During the first music reinforcement phase, appropriate car riding rose to 93%. Appropriate car riding decreased to a mean of 74% during the second baseline. The second contingent music phase resulted in a mean of 95% appropriate car riding behavior. During the first, Ritalin, Mellaril, and music phase the mean appropriate car riding behaviors was 98%. During the Ritalin and Mellaril phase 100% car riding behaviors recorded for the first five trips but the final 13 trips had a mean of 87% appropriate car riding behaviors. The second contingent music, Ritalin, and Mellaril phase increased appropriate car riding behaviors to a mean of 99.6%.

The authors concluded that contingent music effectively increased appropriate car riding behavior. They also noted that the contingent music increased the effect of Ritalin and Mellaril.

The third experiment dealt with determining whether a remote control device would be an efficient means of presenting contingent music. An ABA experimental design was used in this study. Observations were made during times when the boy was walking appropriately and received music and when there was silence due to inappropriate walking by the boy.

During the baseline phase, a cassette recorder carried by the therapist was used to present contingent music. During the second phase, a wireless remote control device was used to present contingent music. The therapist could turn music on and off by pressing a button on a hand held transmitter. the third phase was a return to baseline conditions.

Observations of music error ranged from 12% to 32% during the baseline, from 8% to 20% during the remote control phase, and from 8% to 32% during the second baseline. The authors concluded that the remote control device was a practical and effective method of controlling the presentation of contingent music.

Art Form: Music
Disability: Autism

Stevens, Emily, & Clark, Frank. Music therapy in the treatment of autistic children. Journal of Music Therapy, 1969, 6(4), 98-104.

Purposing to assess systematically some of the generalized social effects of music therapy, the authors hypothesized that music therapy provides effective techniques for the improvement of prosocial behaviors among autistic children. "Prosocial behaviors" were defined as a broad range of generally recognized socially acceptable, adaptive, and adjusted behaviors. Using a pretest/posttest design, the authors compared social behavioral changes, following a series of 18 music therapy sessions, to baseline level of functioning.

Although the study does not indicate whether they were randomly selected, the subjects were five boys, ages 5 to 7, from the outpatient list of the Georgia Mental Health Institute, Children's Unit, previously diagnosed by psychiatrists as being autistic or psychotic. Two of the boys were white, and three were black; all came from a middle or upper-middle socio-economic background. Representative of two classifications of autistic behaviors, hyperactive-destructive and passive-phlegmatic, the boys all demonstrated unusual and severe deviant behaviors which the experimenters were attempting to change.

Unfortunately, the experimenters were unable to get psychological data on the children because they were too withdrawn or hyperactive for reliable testing. Home evaluation was done but the small number of subjects precluded statistical analysis of this data in any reportable fashion.

The procedure involved each boy with three phases of the study: (a) initial assessment; (b) 18 weekly music therapy sessions of approximately 45 minutes; and (c) final assessment. Although details of the music materials and session procedures were not reported but are available upon request for the authors, they report the therapist individualized treatment, involving instrumental music and singing activities, to each client. Some children progressed by attending to a particular instrument, some responded by keeping a beat; others initiated playing an instrument or verbalizing. As all children had speech difficulties which seemed assessable to treatment through music, the therapist emphasized vocalization and verbalization as a goal for all participants. For children who did not readily verbalize, the therapist chose songs to stimulate this behavior; i.e., playing and singing to a cue word in "Pop Goes the Weasel", then stopping and waiting for the child to say the word or phrase. With children who babbled aimlessly and spoke in ritualistic manners, the therapist tried to relate his verbalization to something more meaningful; e.g., coupling some numbers or letters repeated by a child with letters or numbers on an instrument and/or in a song like "Ten Little Indians". Action songs were used to develop body image and coordination in the children and to promote interaction with the therapist.

Since each child served as his own control, a baseline of behaviors was established for each subject using the Autism Scale (Ruttenberg et al., 1966) and independently judged videotape recordings of the first, 10th and 18th sessions rated on Intensity (level of concentration) and

Duration (span of attention). As a measure of agreement among the three judges' rating for each session, the Pearson product-moment correlation coefficients were computed and indicated a high degree of reliability on the Autism Scale ratings. The score of the children on the first, 10th, and 18th sessions were tested for significance using the Friedman Two-Way Analysis of Variance by Ranks. Using this parametric statistic based on ranks of the scores, and test changes in score rank over time, the improvements in scores over the 18 sessions were shown to be significant at the $p < .039$. Gains toward more mature social behavior were general for four out of five children; only one boy showed no demonstrable change on the Autism Scale. As scores taken individually are not statistically significant, they are valid only as a group.

In evaluating the videotapes, Intensity and Duration were rated independently by two judges using a three-point scale for degree of attention (Intensity), and time in seconds for attending to tasks (Duration). The reliability of agreements between judges' ratings were shown to be medium to fair for the Intensity and Duration measures. A statistical analysis of the data using the Walsh Test showed the changes in levels of attention were not significant, p .094.

The authors conclude that four out of five boys demonstrated improvement in their social behavior as a result of their weekly music therapy sessions. Their findings, using the Autism Scale, were supported by parent comments and educational placement in regular kindergarten and first grade classes. However, the measures for attention control and distractibility proved less than satisfactory and too unreliable to assess behavioral changes over time. Notable limitations of this study include the openness of the judges to the influence of the "halo effect", the lack of control of the influence of the therapist and the music room setting, and the lack of reliability of the Duration and Intensity scales. Areas for further study include determining which stimuli or responses events are therapeutic, and to what degree are improvements the result of therapist personality, controlled environment, and/or the appeal of music. Investigators may also pursue the implied improvement on speech in autistic subjects with music therapy.

Art Form: Music
Disability: Behaviorally Disordered

Wilson, Claire V. The use of rock music as a reward in behavior therapy with children. Journal of Music Therapy, 1976, 13 (1), 39-48.

The author hypothesized that the disruption behaviors of a preschool special education group could be controlled or suppressed by the withdrawal of positive reinforcement and occasional use of a time-out room. Subjects were five boys and one girl, with ages ranging 5 yr. to 7 yr., selected from a therapeutic nursery school in a lower socioeconomic area of Philadelphia, Pennsylvania. All were labeled unacceptable to attend a regular public school because of their behavioral or emotional problems, and their inability to function in a group. The rock music selected were all well-known songs from commercially successful albums by popular artists, particularly the Beatles, and played over a sound system at 85 db. After several hours of observing the subjects' behaviors during their afternoon art sessions, the unacceptable behaviors were defined and a baseline was established. In the training session, the subjects were told the music was being played during art "to help them control themselves, and concentrate on their work", and instructions were given concerning the cause of interruption. In the other sessions, when the music was withdrawn contingent upon an undesirable behavior, an explanation of the interruption was given to the child, and more appropriate behaviors were suggested. The music was stopped whenever an undesirable behavior was observed by the experimenter or by three staff members seated at the table with the children. When the child persisted with an undesirable behavior after several stops and warnings, time-out (five minutes in the hallway) was put into effect.

Treatment data was examined in a one-factor analysis of variance, and verified a significant main effect ($p < .01$). A Newman-Keuls analysis indicated the significant point of decline in number of stops occured at the time of the training session, $p < .01$. Effective suppression then occurred at the introduction of the treatment procedure, and a low level of response was maintained. Treatment session means were: Baseline, 17.60; Training, 5.80; 1-3, 4.26; 4-6, 2.86; 7-9, 2.60; 10-12, 2.40; and 13-15, 1.33.

Peer pressure started in the first session with complaints when the music was stopped, and directions to the child responsible to control him/her self. The fourth session showed strong peer pressure with the childern monitoring each other to prevent interruption of the music. By the ninth session, the children had learned the words to the songs, and those children who were previously disruptive, and were now exhibiting approximate behaviors, were given social reinforcements of attention and approval at the end of the session. During sessions 10-12, there were some attempts at purposely stopping the music but this form of attention seeking resulted in an automatic time out. During sessions 13-15, a packet of gum was awarded to those subjects who caused no interruptions. By the final session, only the experimentors and one staff member were present, no additional control was needed. Problems in the study were the lack of extinction of disruptive behaviors, and the lack of isolation of individual procedures or rewards — rock music, time-out, social rewards and the packet of gum. The combination was effective and the procedure could be adapted to fit a classroom setting.

Art Form: Music
Disability: Learning Disabled

Baxley, Barbara L. The effects of training in discrimination of pitches on the ability to discriminate speech sounds in primary age children classified as learning disabled in the area of auditory discrimination. (ED 170 992)

The purpose of this study was to investigate whether training children to differentiate between musical pitches would effect their ability to differentiate between speech sounds. The author stated the following 9 hypothesis in null form:

1. There is no difference in the author-constructed Pitch Discrimination Test (PD) scores of children who were administered the pretest and those children who did not take the pretest.
2. There is no difference between the PD posttest scores of children receiving treatment and children not receiving treatment.
3. There is no treatment-pretesting interaction effect on the posttest scores of any of the group involved in the experiment, on the PD test.
4. There is no difference in PD posttest scores of any of the group because of IQ, age, reading level, and grade level.
5. There is no difference on the posttest scores on the Wepman Auditory Discrimination Test (Wepman)(1973) between children administered pretests and those who did not.
6. There is no difference on the posttest scores on the Wepman between children receiving treatment and those who did not receive treatment.
7. There is not treatment-pretesting interaction effect on the posttest scores of any of the groups on the Wepman.
8. There is no difference in the posttest scores of any of the groups on the Wepman because of IQ, age, reading level, and grade level.
9. There is no positive relationship between scores on the PD test and Wepman scores.

The sample included 28 students in two control groups and 36 students assigned to two experimental groups. The sample children ranged from six to nine years and were chosen on the basis of IQ, age, reading level, and grade level. The children were taken from the remedial resource rooms of 19 elementary schools in North Texas. The children had been classified as learning disabled in auditory discrimination based on criteria determined by the Texas Education Agency (1973). Children from schools with a greater number of subjects were selected for the two experimental groups.

The Solomon Four-Group design was used in this experiment. One experimental group and one control group each received pretests in this design while the other two groups did not. The PD test and the Wepman were taped and administered individually to the children as the pre and posttests. Children in the experimental groups were treated in seven groups determined by which school they attended. The children were trained by the experimentor to tell the difference between pairs of successive pitches of no less than a major second and no more than two octaves during 10, 15 to 20 minute sessions. The children were required to master the concept of same/different. They also demonstrated an understanding of pitch difference through body movement activities or verbal response. The program lasted for five weeks. The control group children did not receive the training.

The author eliminated two easy and two hard items from the PD test based on Chi-square tests of independence. The corrected PD test showed a .69 correlation coefficient. The test-retest reliability of the PD test was .69 as determined by the scores of the control group that was pretested.

An analysis of variance, an analysis of covariance, and t-tests were used to evaluate the data from the four groups. The level of significance was set at the .05 level. The author reported the following results:

1. Posttest scores on the PD test were affected by pretesting.
2. Posttest scores on the PD test were influenced by the treatment program.
3. The interaction between pretesting and treatment appeared to cause a difference in PD posttest scores.
4. Age does influence PD posttest scores, however, IQ, reading level, and grade level do not effect posttest PD scores.
5. Posttest scores on the Wepman were affected by pretesting.
6. The Wepman posttest scores were not affected by the treatment program.
7. Wepman posttest scores were not changed because of an interaction between treatment and pretesting.
8. Wepman posttest scores were not affected by IQ, age, reading level, or grade level.

Pearson product-moment correlations determined a small positive relationship of .24 between scores of the Wepman and the PD tests.

The author concludes that this study indicates there is a small but positive relationship between the ability to differentiate between speech sounds. She suggests that future studies should include subjects who are at least nine-years-old since this is the usual age of children who can discriminate between speech sounds. She also notes that the sample should be restricted to children who are within one year in age from each other.

Art Form: Music
Disability: Learning Disabled

Decuir, Anthony A., & Braswell, Charles E. A musical profile for a sample of learning-disabled children and adolescents: a pilot study. Perceptual and Motor Skills, 1978, 46 (3), 1080-1082.

This study attempted to formulate a music profile for visual, auditory and mixed symptoms subgroups of learning-disabled individuals and for the total sample. The hypotheses were: (a) no differences would be observed between subtest scores of the three subgroups, (b) no differences would be observed between subtest scores of the three subgroups of learning disabled, and normal individuals, and (c) no differences would be observed between subtest scores of the total sample of learning disabled individuals and normal individuals.

The subjects were 31 learning disabled individuals, 25 boys and 6 girls, age range 10.1 yr. to 15.1 yr. attending the Crescent Academy, New Orleans, Louisiana. According to the authors, all were of normal or above normal intelligence, and fell into one of the following subgroups: visual learning disability (n=13), auditory learning disability (n=5), and mixed symptons learning disability (n=13). The Pitch, Loudness, Rhythm, Time, and Tonal Memory subtests of the Seashore Measures of Musical Talents (Seashore, 1966) were given to the subjects, and means for subtest scores were computed for the three subgroups and for the total sample. The Seashore norms for Grades 6 to 8 were used to obtain percentile equivalents.

Results indicated that the Seashore test did not discriminate between subgroups of these learning disabled individuals. However, differences were found in percentile equivalents between these learning disabled and normal individuals. Hypothesis b and c were tentatively rejected pending further study. A possible weakness in the study was the small sample number in each of the learning disability subgroups.

Art Form: Music
Disability: Neurologically Handicapped

Pirtle, M. & Senton, K.P. Use of music training to actuate conceptual growth in neurologically handicapped children. Journal of Research in Music Education. 1973, 21, (4), 292-301.

This study was designed to investigate whether musical experiences could help neurologically handicapped children improve spatial, temporal, and ordinal concepts by improving their musical concept development. The authors attempted to discover whether musical experiences would improve the neurologically impaired child's ability to perceive music, improve goal-oriented behavior, and develop parallel concepts in language.

The sample included 15 pairs of children selected from special education classes at the Institute of Logopedics. The pairs were matched on the basis of mental ages and intelligence quotient or social quotient determined by either the Leiter International Performances Scale (1969) or the Vineland Social Maturity Scale (1965). All of the children had mental ages of six years or less, all had normal hearing sensitivity for pure tones and speech; and none suffered from complicating motor disabilities. The chronological ages ranged from 4 to 12 years. A child from each matched pair was randomly selected for the experimental group while the other became part of the control group.

The children were all administered three researcher designed tests. The first test was designed to determine development of musical concepts and covered melody, rhythm, harmony, expression, and form. This test was based on previous research at the Institute of Logopedics in Wichita, Kansas. The second test evaluated aural concept development in non-musical circumstances. This vocal integration test was intended to correlate to each item on the musical development test and tested the same five areas as the musical test. This test attempted to measure comprehension of musical concepts by a non-musical format, assess the level of conceptualization in the five areas, and to determine the influence of musical experiences on verbal comprehension. The third test, a test of verbal comprehension, attempted to test conceptual understanding of music related test words. This test was designed to correlate with the first two tests. None of the tests required verbal responses.

The experimental group was divided into five groups determined by chronological age, social awareness, and each student's level of understanding. The groups each met two times each week for 20 minutes per session. This group received individualized music training designed to increase music concept development through discriminate listening, playing instruments, moving, dancing, and singing. Musical activities were developmentally sequenced and reinforced the musical concepts acquired in preceding sessions. Both groups (that were not involved in this experiment) continued with classroom music lessons two times per week. At the end of the 6 month program all the children were again administered the three researcher designed tests and one of the psychometric tests.

Standard t-tests indicated that the improvement in the mean of control group scores was significant at the .05 level of confidence on the test of musical development. The mean improvement in the experimental group scores was significant at the .001 level of confidence on this test. The experimental group also increased scores on both language tests at the .001 level

of significance, while the control group only increased test scores on the verbal comprehension at a significant level (.05 level of confidence). The experimental group showed improvement at the .05 significance level in intelligent quotients as measured by the Leiter International Performance Scale or the Vineland Social Maturity Scale. The control group exhibited no significant increase in intelligence quotient scores. A standard inference was utilized to compare the means of the experimental and control groups. These results indicate that there was no significant difference in intelligent quotient improvement but there was a significant difference at the .001 level on the test of musical development. The experimental group also showed a higher improvement on the vocal integration test, significant at the .001 level, and on the verbal comprehension test, significant at the .05 level.

The authors state that test results indicate that training in musical concepts can increase a child's growth in musical conceptualization and also in related temporal, ordinal, and spatial concepts. The authors also note that music training enhances understanding of basic concepts which are necessary for the development of various communication skills. They suggest that the musical experiences presented in this study would be beneficial to culturally deprived children and that further investigation should examine possible benefits of intensive musical experiences for the normal child.

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Art Form: Music
Disability: Learning Disabled

Rejto, Alice. Music as an aid in the remediation of learning disabilities. Journal of Learning Disabilities, 1973, 6 (5), 286-295.

The purpose of this study was to investigate whether structured piano and music theory training, utilizing, visual, aural, and tactual concepts, could increase a learning disabled boy's perceptual processes.

A seven year old boy was evaluated as having a Weschler Intelligence Scale for Children (WISC) (n.d.) full scale IQ of 131, a verbal IQ of 145 and a performance IQ of 115. He was also given the following tests and received these results: The Bender Visual-Motor Gestalt (n.d.) and Goodenough Draw-a-Person Test (n.d.) indicated perceptual and motor task problems; the Frostig Developmental Test of Visual Perception (Frostig) (n.d.) indicated his biggest difficulties were in eye-motor coordination and form constancy, however, his scores were under age norms in all five subtests and his perceptual quotient (PQ) was 67 placing him in the lowest 1%; on the Illinois Test of Psycholinguistic Abilities (ITPA) (n.d.) he attained a mental age of 6-5. His chronological age was 7-4 at testing; the Spache Diagnostic Reading Scale showed that the boy had difficulty retaining information when material was read to him. He also had trouble concentrating during silent reading; the Peabody Picture Vocabulary Test (n.d.) resulted in an IQ of 136; the Slosson Intelligence Test gave him an IQ of 130; he achieved grade level on the Wide Range Achievement Test (n.d.). Although he was in a regular third grade class it had been recommended that the boy be placed in a class for the learning disabled.

The boy attended 23, one hour piano lessons over a six month period. The lessons were based on the subtests of the Frostig, ITPA, and WISC. He also practiced 30-60 minutes each day and finished daily theory homework on a regular basis. The first part of the lesson consisted of playing simple melodys and scales on the piano and were taught initially by the use of the black keys and chanting the words to simple songs while playing the notes. Finger numbers and note names were used during the beginning lessons. The second portion of the lesson was used for theory which included drawing notes, clefs, and staffs. The boy's mother played listening and rhythm games with him each week. The boy also continued to receive speech therapy at school which had begun two years prior to the music therapy.

The WISC, ITPA, and Frostig were administered at the end of the music therapy. During the 12 months between pre- and post-testing, the boys WISC full scale score rose from 131 to 146; and his subtest scores increased from 6-6 to 11-2 years in Digit Span, from 6-10 to 10-2 in Block Assembly, and from 5-2 to 8-2 on Object Assembly. His Frostig PQ improved from 67 to 104 and his Perceptual Age rose from 6-5 to 8-6 on the ITPA.

The author suggested that music helped the boy develop new learning channels which aided him in language development. Rejto noted that a study with more subjects should be attempted. She also stated that since the gains occured over a 12 month period and the music therapy program took place during the final six months only, there may have been an effect present in the experiment caused by the six months prior to the experiment.

Art Form: Music
Disability: Learning disabled

Vernetti, Carol J. & Jacobs, John F. Effects of music used to mask noise in learning disability classes. Journal of Learning Disabilities, 1972, 5(9), 533-537.

This study investigated whether learning disabled children would perform better academically when noise was masked by music or when music was not present in the classroom.

The 53 children in this study came from eight learning disability classes in a suburban Chicago school district. The author does not mention sampling procedures. All children showed a learning difficulty in at least one academic area which placed them below grade level, or exhibited at least a 15 point difference in verbal and performance IQ scores on the Stanford Achievement Test. The 11 girls and 42 boys ranged from age 7 to 14, had IQ scores from 63 to 114, and had math achievement grade scores ranging from 1.0 to 7.2 on the Stanford Achievement Test.

Each child was asked to complete 20 computational math problems, randomly selected from the math book the child was currently using, within a five minute period. During the first sessions the child either heard a five minute segment of the "Nutcracker Suite" or the regular classroom background noise was heard. The worksheets were collected and the alternate condition was put into effect for five minutes with the children working on a new math worksheet. This study was conducted for eight days. Eight noise condition sessions were randomly presented and eight music masking sessions were alternately presented. The number of math problems correctly completed was recorded for each child after each session as was the child's completion time. The children who did not complete the math worksheets were given a five minute time for that session.

An analysis of variance using a treatment-by-treatment-by-subjects design revealed that there was no significant difference between the music condition and noise condition when comparing the number of correct problems or the time it took to correctly finish the problems. Chi-square analysis determined that there was no significant difference between age, IQ, task difficulty, or math performance under either condition. The chi-square analysis also was used to see if a significant difference was due to attitudes towards music but no significant difference was found. The authors concluded that elimination of background noise was unessential in learning disabled classrooms.

Art Form: Music
Disability: Speech Delayed

Seybold, Charles D. The value and use of music activities in the treatment of speech delayed children. Journal of Music Therapy, 1971, 8 (3), 102-110.

This study was designed to evaluate the value and use of music activities in the treatment of speech delayed children. The author attempted to create a musical activities program which would stimulate speech delayed children to use spontaneous speech communication appropriate for their age.

A random selection of eight male preschool children, chosen from the available population at the Michigan State University Speech and Hearing Clinic, was divided equally into experimental and control groups. The children had been determined to be speech delayed by differential diagnosis and all had previously received speech therapy. The experimental group had a mean age of 5.2 years and the control group had a mean age of 5.1 years.

The children in the experimental group received two individual therapy sessions per week over an eight week period. The 50 minute sessions were based primarily on singing activities and began with the therapist and child singing "Good Morning" (to the tune of "Happy Birthday") to each other. Action songs and musical stories were sung and simple instruments such as the kazoo were incorporated into the program. After the child's speech responses were elicited through the music activities, the therapist initiated a related non-musical speech activity. Five to ten minutes were reserved during each session for the musical activity that the child enjoyed the most. At the end of each session, the therapist and client sang "Goodbye" to each other to the tune of "Frere Jacques".

The time frame and number of sessions was the same for the control group as for the experimental group. The control group received a regular program of individual speech therapy which consisted of games that encouraged longer phrases and sentences, structured responses, and spontaneous speech. All eight children were given the Houston Test for Language Development (Crabtree, 1963) after the treatment. The Mann-Whitney U test was used to analyze the data from the experimental and control groups. The test showed that the results were significant at the .10 level.

The author stated that no specific conclusions could be made because of the low significance level. He suggested, however, that the experimental group did achieve a higher success rate in spontaneous speech than the control group.

Art Form: Dance/Movement
Disability: Deaf

Lubin, Ellen., & Sherrill, Claudine. Motor Creativity of Preschool Deaf Children. American Annals of the Deaf, 1980, 125, 460-466.

Noting the dearth of research on the creative movement of deaf children, the authors hypothesized that there would be no difference between deaf children's scores on the Torrance Test of Thinking Creatively in Action and Movement (TTTCAM) (Torrance, 1976) and nonimpaired children's scores on the TTTCAM. The authors further hypothesized that there would be no difference between the scores on the TTTCAM of an experimental group of deaf children who received a planned program of movement experiences and the scores on the TTTCAM of a control group of deaf children who received nonguided movement experiences.

Two groups of deaf children (one group of 12 students from the Callier Center for Communication Disorders in Dallas, Texas and a group of 12 students from the Country Day school for the Deaf in Fort Worth, Texas) were tested. Each school provided 6 students for an experimental group and 6 students for the control group. Both experimental and control goups were collapsed into to larger groups of 12 each for data comparisons. The control and experimental groups were matched fairly well on sex, age, race, intelligence, hearing loss and eitologies. The control group had 6 males and 6 females; 3 to 4 years of age. The experimental group had 7 males and 5 females, 3, 4, and 5 years of age.

Fluency, originality and imagination of the subjects were assessed by the Torrance Test of Thinking Creatively in Action and Movement (TTTACM) (1976). The TTTACM necessitates the subject to give movement responses as opposed to verbal responses. In this study responses were scored according to Torrance and the research of Wyrick (1968). The TTTACM was given as a pre and posttest and was administered using total communication.

Students in the experimental group were randomly placed into groups of 3. The treatment using total communication ran for 4 weeks. The treatment consisted of adult guided movement experiences utilizing selected words from the list of I CAN active word groups (Wessel, 1976). These word groups focussed on parts of the body and body motions including time, direction, size and shape. Words were also chosen for their relatedness to the preschool level and to the playground climbing equipment available.

The control group spent the same amount of time (15 minutes daily, 5 days a week, for 4 weeks) in unguided playgroupd activity. The control group was under the supervision of the primary investigator. No adult guidance or related language instruction was given to the control group.

The experimental group had posttest scores on the TTTCAM that were statistically significantly higher than the scores of the control group (t .05 (1,19)=4.38). The deaf children in all the groups scored statistically significantly lower than their non-hearing impaired peers on the TTTCAM ($t<.05$ (1.23)=2.07). Thus after only 20 days of guided movement deaf children significantly improved their motor creativity compared with that of a matched control group.

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The authors note the inferiority of creativity movement of deaf children compared with hearing peers--even after the experimental treatment. Raw test data revealed that in 3 of the pretest activities 58%, of the deaf children failed to score at all (i.e. scored zero). The authors suggest one reason for this lack of scoring is the strong focus in the deaf education curriculum on modeling and on language training using concrete rather than abstract representations. The authors conclude that this focus on the concrete and on imitiative behavior makes it all the more important to expand this student's originality, flexibility and imagination in thought and in movement.

Among other types of research, more study is needed to determine how much time spent in guided movement is needed to bring deaf children's creative movement up to a level equal to that of their hearing peers. The authors also state that more study is needed utilizing the same experimental treatment as was used in this study. There is also the need for a greater focus on divergent thinking in group activities and more problem solving approaches in the classroom and in physical education programming for the hearing impaired learner.

Art Form: Dance/Movement
Disability: Mentally Retarded

Franklin, Shelia B. Movement therapy and selected measures of body image in the trainable, mentally retarded. American Journal of Dance Therapy, 1979, 3, 43-50.

The author postulated that the use of movement therapy as opposed to an adapted physical education program with trainable mentally retarded (TMR) students would result in a change in the way the TMR perceived their body images.

Two self-contained classrooms of TMR students consisting of 9 females and 13 males whose age range was 13 years 4 months to 18 years 1 month (average age was 15 years) comprised the sample. These subjects were paired so that each student placed in the experimental group was matched as closely as possible on age, sex and intelligence with a student in the control group.

Two instruments were used to assess body image; 1) the Cratty and Sam's Body Image Screening Test (BIST) (1968), and the Machover Draw-A-Person Test (DAP, 1949). The BIST assessed the subjects' knowledge of their body parts. Three components of the BIST were used in this study; Body Planes, Body Parts, and Body Movements. The DAP assesses the subjects' attitudes toward their body and their perception of how their bodies look. Nine parts of the DAP (from Wysocki and Wysocki's 1973 study) were selected for this study.

The Movement Therapy Program (MTP) consisted of 2 half-hour sessions each week for 10 weeks. The MTP focused on the exploration of movement, awareness of the body and its parts and the relationship of movement to feelings. Movement exercises, warmups and "follow the leader" activities were accompanied by popular music.

The Adapted Physical Education Program (APEP) ran for the same period of time as the MTP. While the author handled the MTA, two physical education teachers handled the APEP. In the APEP, students did physical fitness activities, yard dashes, and games such as "Back-to-Back" and "toss a soft ball".

Eight of the 11 pairs in the MTP group showed significantly higher gains on the BTST ($t=2.04$, $p < .05$). When the average improvement for the whole MTP group was compared with the entire APEP group, there was a significant gain ($t=2.24$, $p < .025$). The average improvement for the MTP group was 7 points versus 2.64 for the APEP group.

Judges of the DAP had inter-rater reliability coefficients of .91 on 4 of the subtests and .83 on the other subtests. The pre and post DAP scores were not significantly different (two-tailed t test).

While both groups improved on the BIST, the MTP group's improvement was statistically significant suggesting that movement therapy can have a positive effect on the way the TMRs perceive their bodies. The author suggests that the DAP may not have reflected the positive effect of movement therapy because the DAP assesses attitudes toward the body and an attitude, such as ones perception of ones body, takes a long time to change. Thus, a longer treatment period might have resulted in statistically significant DAP scores on the posttest for the MTP group.

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The author is quick to point out that this was a pilot study and that many factors were not controlled. Among the study's weaknesses were the brief time for testing (15 minutes for the BISC and 15 minutes for the DAP), the small number of subjects and the absence of norms on the Body Image Screening Test for the TMR. More research is warranted and may help movement therapy become a part of the mainstream of the curriculum for special education students.

Art Form: Dance
Disability: Autism/Psychosis

Gunning, Susan V., & Holmes, Thomas H. Dance therapy with psychotic children. Archives of General Psychiatry, 1973, 28(5), 707-713.

The therapeutic use of dance over a one-year period with a girl who was three and one-half years old with infantile autism; a girl who was ten years old with childhood schizophrenia and a boy who was eleven years old with psychotic/antisocial behaviors and a chronic brain syndrome is described by the authors. Then, the authors describe the development of an assessment tool for use in evaluating the effects of dance therapy with this type of clientele.

This scale, called the Volwiler Body Movement Analysis (VBMA) scale, was constructed based on clinical observations and descriptions of the body movement of psychotic children receiving dance therapy. The VBMA scale was revised and refined seven times and resulted in 19 body movement components that are scored on a scale of 10 points (0=not testable, 1=least or poorest score, 9=highest or best possible score). The 19 items include: muscle development and dexterity; arm, leg and torso muscle power; general coordination; flexibility in the joints; equilibrium/balance; fluidity of movements into one another; clearness of stationary movement and directional movement, movement speed, rhythm and dexterity, stamina, muscle strain, random movement and inappropriate movement repetition. The VBMA scale was used to evaluate 23 typical children that were 3 to 6 years and 28 typical children that were 6 to 12 years old. The 3 to 4 year old children were from families that were lower middle class, while the rest of the children were from families who were middle or lower middle-class. All the subjects were identified by teachers as being representative of their age on intelligence, performance in school, physical development and coordination, as well as being stable emotionally. There were 25 girls and 26 boys in these two groups and all subjects were white.

The VBMA scale was also used to assess 14 children who were psychotic and under treatment in a day-care facility. Two members of the psychotic group were black. There were 10 boys and 4 girls and their ages ranged from 4 to 12 years. Four of the children were diagnosed as autistic, seven as schiphrenic, two as psychotic and retarded and one as psychotic and brain damaged. The group was assessed one to three times over an eight month period using the VBMA scale. The group spent six hours daily at the facility and received therapeutic treatment in the following modalities: dance, occupational, recreational, play and therapy. The length of the dance therapy treatment varied depending on the individual child's need (with the range being from 1 and 1 1/2 hours daily to 3/4 hour, three times a weekly). The scores of the psychotic children on the VBMA were compared with the scores of the typical children using the Mann-Whitney U test for mean score differences. the Kruskull-Wallis Analysis of Variance was used to analyze individual body movements in the experimental group. A composite score on the VBMA was computed for each child which yielded a Volwiler Motor Quotient (VMQ). To analyze differences in the VMQ of the psychotic group at different times during the dance therapy treatment, the Wilcoxan Rank Sum test was utilized.

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Scores of the 3, 4, and 5 year olds in the control group were so similar that these scores were combined to produce an average score for this group. The same was done for the 6 to 12 year old group since their scores were very similar. In comparing scores of these two control groups there was a significant difference (that is, the younger group scored significantly lower) beween the groups' scores ($p < .05$) on the following scale items: muscular development, coordination muscle strength in legs, arms and torso, equilibrium, progression of movement, rhythm and stamina. The younger control group had higher scores on flexibility in the joints and elasticity in the muscles than the older control group.

The psychotic children had significantly lower scores than the control groups on all of the scale items ($p < 0.001$ on elasticity of muscles and torso muscle strength; $p < .005$ on rhythm; $p < .0003$ on all other items) except flexibility of joints.

After an average of seven months, the psychotic group significantly improved ($p < .05$) on the following scale items: strength in arm muscles, torso muscle strength, movement dexterity, movement forcefulness, and stamina elasticity of muscles and random movement ($p < 005$). Scores on the rest of the items increased significantly at the .00003 level. The VMQ of the psychotic group increased from 53 in January to 71 in August (a VMQ of 100 is considered average). The authors buttress these figures with a discussion of three cases taken from the psychotic group and report improvements after therapeutic treatment of 38%, 19% and 25% respectively on the VMQ. (However, it is difficult to pinpoint the actual treatment or combination of treatments responsible for these score increases.)

The authors conclude by pointing out that the VBMA was developed to evaluate atypical movement rather than typical movement and to pinpoint movement deficiencies. The two factors which the authors felt accounted for the major differences between the control groups and the psychotic group were diagnosis and chronological age. The VBMA scale is included in the article--but there was no information given as to the reliability or the validity of the scale or the scoring methods utilized.

Strain, Philip S. & Wiegerink, Ronald. The effects of sociodramatic activities on social interaction among behaviorally disordered preschool children. The Journal of Special Education, 1976, 10 (1), 71-75.

The purpose of this study was to investigate whether behaviorally disordered preschool children would increase social play after participating in sociodramatic activities. Social play was defined as sharing roles in play activities, taking turns, holding hands, friendly verbal interactions, building on the same structure, or handing an object to one of the other children.

The sample included eight boys and four girls with a range in age from 40 to 56 months, who were enrolled in an intervention program for behaviorally disordered children in Nashville, Tennessee. Behaviors exhibited by these children included disruptive and oppositional behaviors, delayed speech, poor motor coordination, and social isolation. The authors did not indicate sample selection procedures.

Observer collected data was recorded by two observers during each phase of this experiment, during a 25 minute free-play period. Both observers simultaneously recorded whether a particular child was participating in social play. They recorded 30 scores for each child during the 25 minute session. The experiment was divided into four steps. During the first step baseline data was collected for 12 days. The second step involved the sociodramatic activity as an intervention strategy for 13 days. The lead teacher had previously received five training sessions consisting of rehersal of sociodramatic procedures and choice of materials to be used. During the daily 10-minute story time, the teacher prompted the children in various roles of familiar children's stories as she read the story to them. The children were asked to perform at least two distinct role behaviors as well as participating in verbal and motor behaviors characteristic of their assigned part in the story. The Three Bears, Little Red Riding Hood, Snow White and the Seven Dwarfs, The Gingerbread Man, Katy Nopockets, Cinderella, and Peter Pan were each used for three days during the intervention phase. The third part of the experiment was a return to baseline. The teacher simply read a story and asked the children questions during story time. During the final part of the experiment intervention procedures were reinstated in the same manner as in the first intervention phase. The third and fourth phases each lasted eight days.

Forty-one reliability checks indicated a mean agreement between observers of 94%. The mean percentage of intervals during which the children were involved in social play was 10% during the first baseline phase. During the first intervention phase the mean percent of intervals involving social play rose to 43.6%. The second baseline phase showed a mean of 15.8% of the intervals involving social play. The mean percent of intervals involving social play again increased during the second intervention phase to 47.9%

The authors state that sociodramatic activities and social play are functionally related. They also note that sociodramatic intervention and active recording of student's behaviors involve less teacher time than other strategies which use contingent teacher attention.

List of Dissertations on Arts and the Handicapped

1971-1981

Allrutz, Caroline C. A comparison of neural responses to color stimulus from normal and educable mentally handicapped children. Unpublished doctoral dissertation, Illinois State University, 1975.

Ansuini, Albert M. Competencies for elementary school instrumental music teachers in planning learning experiences for children with learning disabilities (Doctoral dissertation, State University of New York at Buffalo, 1979). Dissertation Abstracts International, 1979, 40-10-A, 5299 (University Microfilms No. AAD80-08127).

Bachelor, Ronald. Creative dramatics and theater arts among socially and emotionally handicapped inner-city adolescents: A description and analysis of a drama project (Doctoral dissertation, Columbia University, 1981). Dissertation Abstracts International, 1981, 41-12-A, 4886. (University Microfilms No. AAD81-11499).

Brown, Joseph L. Effects of the creative thinking ability of teachers on their educationally handicapped students' creative thinking abilities: A longitudinal study using the Torrance Test of Creative Thinking. Unpublished doctoral dissertation, United States International University, 1976.

Cole, Ivy F. Dance therapy with a nonverbal, autistic child: A documentation of process. Unpublished doctoral dissertation, Texas Woman's University, 1979.

Damer, Linda K. A study of attitudes of selected public school music teachers toward the integration of handicapped students into music classes (Doctoral dissertation, The University of North Carolina at Greensboro, 1979). Dissertation Abstracts International, 1979, 40-07-A, 3862. (University Microfilms No. AAD80-02572).

Del Regato, John C. The utilization of echolic codes by visually handicapped in mathematical learning: An exploratory investigation. Unpublished doctoral dissertation, University of Oregon, 1976.

Friese, Afzal J. An exploratory study of normative developmental growth as reflected in the drawings of normal and trainable mentally retarded children. Unpublished doctoral dissertation, University of Cincinnati, 1972.

Gair, Sondra B. The effects of an art-based visual perception program on selected psycholingusitic abilities of learning disabled children (Doctoral dissertation, The American University, 1973). Dissertation Abstracts International, 1973, 35-02-A, 908. (University Microfilms No. AAD74-16932).

Gilles, Dorothy K. C. The development and evaluation of a special education music methods course for preservice and inservice teachers (Doctoral dissertation, St. Louis University, 1978). Dissertation Abstracts International, 1978, 40-05-A, 2602. (University Microfilms No. AAD79-23821).

Harris, Mary A. Auditory training of learning disabled using Orff music (Doctoral dissertation, Memphis State University, 1976). Dissertation Abstracts International, 1976, 37-08-A, 5035. (University Microfilms No. AAD77-03149).

Helfrich, David C. The effect of rock music, controlled for tempo volume on disabled readers in remedial reading classes (Doctoral dissertation, University of Georgia, 1973). Dissertation Abstracts International, 1973, 34-06-A, 3024. (University Microfilms No. AAD73-31897).

Hochheimer, Laura T. A critical comparison of certain European and American pedological approaches to the use of music in the rehabilitation of physically handicapped children (Doctoral dissertation, Indiana University, 1972). Dissertation Abstracts International, 1972, 32-08-A, 4454. (University Microfilms No. AAD73-12715).

Ianacone, R. N. The measurement of music aptitude for the mentally retarded (Doctoral dissertation, University of Florida, 1977). Dissertation Abstracts International, 1977, 37-10-A. (University Microfilms No. AAD77-8189).

Johnson, David Reed. Cognitive organization in paranoid and nonparanoid schizophrenia: A study of self-other representations in improvisational role-playing and on the Rorschach. Unpublished doctoral dissertation, Yale University, 1980.

Kavaler, S. I. The effects of dance therapy on mentally retarded children (Doctoral dissertation, Adelphi University, 1974). Dissertation Abstracts International, 1974, 35-5-B, 2435.

Lamport, Lance C. The effects of a specific perceptual-motor physical education program on the self-concept of children with learning disabilities. Unpublished doctoral dissertation, The University of New Mexico, 1974.

Leaf, Linaya Lynn. The identification and classification of educational objectives for creative dramatics when it is done with handicapped children and youth in the United States. Unpublished doctoral dissertation, University of Oregon, 1980.

Lee, Jeffrey C. The effectiveness of two types of visual aid treatments on eye movement performance of educationally handicapped pupils in the public school (Doctoral dissertation, The University of the Pacific, 1973). Dissertation Abstracts International, 1973, 34-03-A, 1084. (University Microfilms No. AAD73-200G3).

Lehn, Joan K. An investigation of music in the education of mentally and physically handicapped children in the United Kingdom with particular reference to the course, "music for slow learners," at Darlington College of Arts (Doctoral dissertation, The Ohio State University, 1977). Dissertation Abstracts International, 1977, 38-11-A, 6594. (University Microfilms No. AAD78-05874).

Leyser, Yona. The effects of role-playing in elementary school classrooms on children with low sociometric status. Unpublished doctoral dissertation, Indiana University, 1975.

Martin, Grant L. Proportional analysis of special education, regular class student, and adult performance on eleven basic movement cycles (Doctoral dissertation, University of Washington, 1971). Dissertation Abstracts International, 1971, 32-05-A, 2487. (University Microfilms No. AAD71-28443).

May, Deborah C. The effects of color reversal of figure and ground drawing materials on the drawing performance of cerebral palsied and normal children. Unpublished doctoral dissertation, Columbia University Teachers College, 1974.

Miller, Sidney R. Visual remedial program effects on visual perceptual discrimination, and academic and drawing behavior. Unpublished doctoral dissertation, The Pennsylvania State University, 1974.

Newby, Marilyn P. The evolution of art in the treatment of socially and emotionally maladjusted children in residential institutions. Unpublished doctoral dissertation, The Pennsylvania State University, 1981.

Rosene, Paul E. A field study of wind instrument training for educable mentally handicapped children (Doctoral dissertation, University of Illinois at Urbana-Champaign, 1976). Dissertation Abstracts International, 1976, 37-050A, 2485. (University Microfilms No. AAD76-24170).

Rubin, Judith A. Children, art, and growing . . . in diagnosis, therapy, and education. Unpublished doctoral dissertation, The University of Pittsburgh, 1976.

Twillie, Gwendolyn B. The effects of creative dance on the school readiness of five-year-old children. Unpublished doctoral dissertation, Texas Woman's University, 1980.

Vogel, Muriel R. The effect of a program of creative dramatics on young children with specific learning disabilities. Unpublished doctoral dissertation, Fordham University, 1975.

Wilderson, Charlotte L. A study of the comparison of art produced by minimally brain-damaged children and art produced by normal children in selected public schools of Baltimore County, Maryland. Unpublished doctoral dissertation, The American University, 1972.